THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. XLVIII. SATURDAY, FEBRUARY 13, 1886. No. 7.

ORIGINAL ARTICLES.

PHYSIOLOGICAL STUDIES OF THE KNEE-JERK, AND OF THE REACTIONS OF MUSCLES UNDER MECHANICAL AND OTHER EXCITANTS.

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THE phenomenon known as tendon reflex, knee-jerk, myotatic contraction, has won steady attention since Westphal pointed out its value. Indeed, as regards what we may call its natural history there seemed little of a novel nature to be learned. The discussion as to its true parentage has also been narrowed so far as to enable us to feel sure that the blow on a tendon causes motion in the related muscle, not owing to an afferent impression from the tendon, but either to a direct irritation of the muscle concerned—*i. e.*, direct muscle response, or to the pull on the muscle causing afferent sensory impressions to the cord, and efferent motor response—*i. e.*, reflex action.

At this point we leave the matter for a time to turn to our own researches on the normal history of the "knee-jerk."

We shall relate in detail all the results we have so far obtained, and shall then endeavor to show the relation some of them bear to the possible theoretic explanations of the cause of the knee-jerk.

Our point of departure was a remark of Dr. Buzzard's, in a debate before the London Medical Society, in regard to Jendrássik's discovery, now three years old, as to the power of violent volitional muscular acts to increase the amount of the knee-jerk.

Jendrássik, in his essay,[1] states in a too brief paragraph that if, when the patellar tendon is struck, the patient clinches his hands, or makes other violent movement, the coincident jerk is increased. His other conclusions are: that the knee-jerk is a true reflex caused by mechanical irritation of the nerves in the tendon; that the muscle must be in a condition of passive tension; that voluntary innervation of the crural nerve lessens the reflex, or prevents it altogether; and that innervation of the sciatic favors the knee-jerk.

As the word knee-jerk will, of necessity, be frequently repeated in this article, it will be hereafter spoken of as k.-j.

[1] Beiträge zur Lehre von den Sehnenreflexen, von Dr. Ernst Jendrássik. Deutsches Archiv für klinische Medicin, vol. xxxiii. page 175, 1883.

Our own research has led us to examine with care—

1. The circumstances which increase, and those which lessen the k.-j., and to consider the influences exerted by volition, motion, sensation, electricity, tension, etc.

2. The characteristics of direct muscular motion caused by a blow, and the effects on it of voluntary motion, sensation, electricity, tension, etc.

These portions of our work must be regarded as contributions to a branch of normal physiology. We have kept them apart from the brief speculations which follow as to the theory of tendon reactions, and of the various novel phenomena which we shall describe.

Manner of obtaining the knee-jerk, and its normal variations. The experiments which give the best result are made by placing the subjects, healthy young men, on their backs on a lounge, so that they rest absolutely without muscular exertion. It is necessary or best that their hands be at rest, their eyes passive, and that they neither laugh, cough, speak, nor swallow, except when it is desired to test the effects of these acts on the phenomenon to be studied.

If the subject be seated, many of the results—indeed, all the coarser ones—can be had, but the more delicate experiments are apt to fail. The legs are allowed to hang over the foot of the lounge at varied angles with the thigh, which is itself bent at a very obtuse angle with the trunk. It is better for some of the experiments, however, to let the lower end of the thigh rest easily on two rubber pads placed at the sides of a wooden support, which is cut out below, so as to prevent pressure on the back of the thigh, and this for reasons which will appear elsewhere. Thus placed, the thigh is free from pressure, except where the tuberosities of the femur rest upon the pads, and the leg is at liberty to swing.

At the risk of being tedious, it is well to explain the modes of exciting the k.-j. so as best to get the effects of coincident and remote impressions. With a rubber percussion hammer, which should have a slightly elastic steel handle, and be not too light nor too hard, blows are struck on the tendon at intervals, or else a more or less constant excitement of the muscle is kept up by a series of quickly repeated taps. A sort of partial tetany is thus caused, and with care can be made quite equal, so that any new element of increase is easily seen. This, perhaps, is the best method for the more delicate tests. A good plan is to place across the tendon an oblong piece of rubber, and to strike on it. Still better is it, in sensitive persons, to place one's forefinger across the tendon, and to strike on this. We get thus a double means of judging the force used, because we can feel the responsive succession of jerks

of the tendon on the sensitive palmar face of the finger. A good impression is thus obtained of the briefness of the interval between the time of the blow on top of the finger and the time of the answering jerk of the tendon beneath it. Other and obvious precautions are needful at times, such as absence of constricting clothes, care to prevent swing of the pendant leg when struck.

The k.-j. varies in quality in healthy men. In some the same weight of blow causes pretty constant effects when steadily repeated at like intervals, but in others the effects are inconstant, and a series of slight motions are apt to be followed by an excessively exaggerated act. Such persons make bad subjects for experimentation.

This explosiveness is also apt to follow much excitation of the muscle.

Even in the young and healthy the k.-j. varies remarkably. On the whole, it is less good in the evening than early in the day, and possibly relaxing states of weather, as we shall show further on, may be capable of lessening these muscular responses. When familiar with the normal of one person's k.-j., it becomes easy to see that at times when he is not well or is exhausted, and especially, as we have said, toward ten at night, there may be some distinct lessening of the ease of muscular reply to the tap.

In one case of a healthy man, over fifty, there is often a good k.-j. in the morning in the left leg, and none, or almost none, later in the day; whilst, in the other leg, the jerk varies naturally from day to day, and is sometimes singularly good in both legs. A meal and three or four glasses of wine seem in him to favor its increase. Daily repeated excitations through the knee-tap in some healthy persons enormously increase the ease and amount of muscular response. In one case we even felt some concern at the exaggeration of the symptom we finally produced. In some people the muscle soon ceases to contract if the taps be often repeated, at one sitting; in others as healthy, it is very difficult to wear out the power of reply.

Effect of voluntary acts on knee-jerk. While the subject was at rest, as described, the tendon was struck at intervals by an assistant. An effort was made to move the scalp voluntarily, so as to make the volition coincide in time with the tendon tap. When successful, the k.-j. was increased.

The movement of one ear, an act only possible with a few subjects, reinforces the k.-j. Frowning increases k.-j. Distinct but not violent winking increases k.-j., when coincident with the tap and in good subjects. Thus if we wink and strike at different intervals an accidental synchronism reinforces k.-j. Winking forcibly with either eye gives like results, and one eye can thus reinforce k.-j. for either leg. Rolling the eyes from passive central fixation to extreme limit of motion adds to k.-j.; a sudden convergence on a very near point does the same; but these beautiful experiments failed when the subjects were seated, and succeeded when they were supine and used the knee crutch described.

Inspiratory and expiratory acts, if volitional and decided, increase k.-j., especially at the beginning of the movements; and if we suddenly fix the chest either in a full or partly empty state, there is a like result but not well marked.

A laugh or sneeze remarkably increases k.-j. Phonation gives in many people admirable results. To obtain these let the passive supine subject sound, with emphasis, the letters in turn, but so slowly that time may be allowed for a tap on the tendon to be made between each letter as well as with each act of phonation. When this is done, the exaggeration of the k.-j. can be well seen when the knee-tap coincides with the utterance, as contrasted with the lesser effect of the tap between each utterance.

Deglutition gives also very positive increments to the k.-j., but less surely than strong phonetic acts. To avoid chance of some volitional reinforcement, most of these experiments were repeated on ignorant persons to whom an assistant gave a signal to perform a certain act, or who were told to wink or to sound vowels, whilst the operator noted the results. These results are all easy enough to get if we take the precautions mentioned and select men with responsive muscles.

The following coarser muscular acts increase k.-j.:

Action of platysma myoides.

Turning the head strongly.

Drawing in the belly.

Rotation of body on pelvis.

All these acts increase the k.-j. most during the movement and least when the act is complete.

Arms and hands. These parts give, when in forcible action, great increase of k.-j. Elevation of the arms and all other strongly done acts, but especially violent clenching of the hands, are effective. The moment of greatest effort slightly precedes the maximum of reinforcement to the k.-j. Slow or gentle movements give little or no effect.

In a strong, right-handed man, violent closure of the left and much weaker hand gave less addition to k.-j. than similar effort with the right hand. Either hand, with equal amount of action, seemed to affect alike the knee of its own or the opposite side. Motion of one finger suffices to reinforce k.-j.

Legs. Strong movements of the toes in flexion or extension in the leg struck or in the other much increases k.-j., and apparently either act gives an equal result, for its own or the other leg. Large motion of one leg in flexion and extension increases k.-j. of its fellow. The muscular acts of the leg struck were carefully studied, and the more so because our results do not precisely agree with some of the conclusions of Jendrássik.

Voluntary use of quadriceps extensor. All strong contractions of the muscles concerned in k.-j. abolish it entirely. With some care we may eliminate the synchronous activity of the opponent flexors of the leg and so get an expression of the pure voluntary action of the extensor. Thus with the leg of a sensitive subject at a good angle for k.-j. have the foot held, or stay it against some immovable obstacle. Then let him will to extend the restrained foot and with a little trial it will be found that the extensors can be called into isolated activity. If they be strongly contracted, no matter at what angle be the leg, all k.-j. ceases. Now relax them a little and then most suddenly the k.-j. returns in excessive de-

gree. It is curious to note it coming and going with increase or decrease of contraction of the muscles concerned.

Therefore, all violent innervation of the crural nerve prohibits k.-j. All milder innervation increases it. When a movement of the quadriceps extensor is willed about equal to that produced by a tap on the tendon, and a tap is made to coincide with it, an interesting result is obtained. If the act he timed correctly the result is a large sudden movement, which has to the observer, who is thus struck, little of the qualities of an act of will. It is abrupt, jerky, and does not seem to be moderated or passively antagonized as are our ordinary voluntary motions. It has only the peculiarities of a knee-jerk.

Action of leg flexors (opponents of the extensor group). With the patient seated, thigh on crutch, the leg is voluntarily flexed from a level with thigh whilst the k.-j. is being tested; good reactions are obtained, but in this experiment both the flexors and the moderating extensors are functionally active. To get the single influence of the flexors, with the thigh on the crutch, and the subject seated, an assistant suspends the passive leg at the ankle whilst the subject flexes the leg gently, the assistant yielding to the motion. There is then no notable extensor activity. Result, good k.-j. Next active flexion is strongly resisted. Result, great exaggeration of k.-j. up to such flexion as abolishes k.-j. by tension, as will be seen further on.

In these latter observations, if well managed, the action of the extensors is excluded. Sciatic innervation, therefore, whether gentle or strong, reinforces k.-j.

As regards all of the foregoing experiments, the reinforcement of the k.-j. lasted while muscular acts were being performed, was best when they were most intense, and continued for an appreciable time after volition had ceased. This continuation of influence was particularly noticeable with the more violent muscular acts.

Effect of continuous efforts. With the subject supine, blows were struck at intervals, and meanwhile the upper extremities, neck, and back were kept in a state of violent muscular fixation. The k.-j., at first excessive, soon became less and less, but did not quite wear out during any length of possible effort, although it continued to be feeble for some minutes after exertion ceased. In the other leg it remained as usual.

Effect of states of tension. These experiments were made with great care, because they have some bearing on the belief expressed by Jendrássik, Tschirjew, and Gowers, that a state of passive tension due to flexion of the leg on the thigh or to other means —*i. e.*, pushing or striking downward the patella— is a needful factor in enabling the tap to cause k.-j. In other words, they help to determine whether or not anything beyond such muscular tension be requisite, as exists in a relaxed muscle.

A blow on the tendon below or just above the knee whilst the limb is passively flexed, of course most readily evolves the k.-j. We have then present two elements, muscular tension from moderate stretching and also circumstances which mechanically favor the k.-j., as the tightened tendon enables us when we strike it to influence more and more abruptly the mass of the muscle. Is the passive tension essential?

In some sensitive but healthy subjects the following experiment succeeds at times:

The subject is seated on the floor, passive, with the back supported. The leg is in full extension on the thigh, and the body at a right angle with the latter. Complete relaxation is thus attained. Then the stiff rubber cushion is placed above the knee, and a blow is struck so as to fall on it at right angles with the line of the muscle, or the pad is so placed as that the force is rather directed a little upward. The position of the tendon above the knee is such that it has under it a cushion of areolar tissue. The blow evolves a distinct jerk of the muscle. The infrapatellar tendon under like circumstances does not give a response, because the blow must take up its slack and that of the suprapatellar tendon before the pull reaches the muscle, but in this position of the leg there is not space enough beneath the slack tendon below the knee to allow this to occur. In the experiment stated, there is no preparatory tension from knee flexion, and we have only ordinary muscular tone as a preparation. That the result is comparable to that obtained when we tap below the knee with a mechanically tense tendon, is shown by the fact that the motion caused by a blow above the knee, managed so as not to push the patella downward, is reinforced by motion elsewhere. They who hold with Gowers that preliminary passive tension is needed to enable a pull on the muscle to excite it, will plead that every blow on the tendon above the knee placed as described acts at one and the same moment to pull on the muscle and to excite it, and this may be true, nor do we see how entirely to eliminate this element of doubt.

If with the leg relaxed, a blow on the suprapatellar tendon, either at a right angle with the thigh or even in a slightly downward direction, so as to depress the patella, causes a muscle response, the time should be that of a reflex and not the shorter time of a direct muscle act, because these methods do at one and the same moment involve and cause muscle tension (reflex preparation, Jendrássik, Tschirjew, and Gowers), and also muscle excitation. This has not been shown as yet to be the case, and until it has been, there seems no reason to seek beyond the existence of common muscular tone to explain the k.-j. If the time should be found to be that of a reflex act, it would favor the idea that the k.-j. should be so considered.

Effect of extreme tension. It is possible to abolish the knee-jerk even in spastic paralysis by increasing the tension of the muscle. I. P., æt. thirty, case of spastic paralysis. The reactions are excessive. He was placed on his face so that the body and pelvis lay on an upward slope. This brought tension on the upper part of the quadriceps extensor. Then the leg was bent slowly, and at a certain angle the k.-j. rather abruptly failed, as it always does under like circumstances in the normal subject.

As *strong* flexion of the leg upon the thigh has

the effect of greatly diminishing or even abolishing the k.-j., the question arose whether this was caused, in part at least, by the great mechanical disadvantage at which the patellar tendon then was placed, as a blow upon it in this position would have the minimum effect upon the muscle. To investigate this point, the subject was placed upon the floor on his side with the underneath hip and knee each at a right angle; in this position a marked k.-j. was obtainable; now, by slowly extending the trunk upon the thigh, keeping the thigh and leg perfectly quiet, an increased tension was made at the *upper end* of the muscle, while the mechanical arrangement at the knee remained unchanged, except as concerned the increased tension: this procedure had the effect of gradually diminishing and at last even abolishing the k.-j. When the subject was placed upon his side, with the body at a right angle to the thigh, and the leg almost perfectly straight, a very slight k.-j. was obtainable; now if the trunk, as before, was slowly extended upon the thigh, the k.-j. increased markedly with the increasing tension, as now the slack in muscle and tendon was taken up by the pull from above, so that the tap on the tendon could make itself felt upon the muscle more markedly; a further flexion of the leg on the thigh now increased the tension too much, and diminished the k.-j.

It might be considered by some that extreme tension by pulling on the fibrous sheath of the muscle makes the sheath so tense that any external blow is mechanically hindered from impressing the muscle beneath; but the following very interesting and novel experiment appears to make it possible that there is also present a physiological element, although the mechanical arrangement may have some influence. The poles of the secondary coil are placed, for instance, on the belly of the flexor sublimis digitorum with a current that is sufficient to flex powerfully and very painfully the ring and middle fingers into the palm, so as to put them entirely beyond the control of the will. Then an assistant forcibly extends the flexed fingers and wrist; this procedure at first increases the pain, but by the time the wrist and fingers are fairly extended the contraction and the pain begin to diminish until at full extension pain is almost entirely gone, only a sense of discomfort remaining, and the fingers are again under full control of the will. If now we release the wrist, the fingers return to their powerfully flexed condition and the pain becomes as great as before.

It seems probable, on the whole, that moderate tension is mechanically of use in enabling us to get the fullest k.-j., but is certainly not essential to the evolution of lesser manifestations of the phenomenon. Extreme tension, of course, may make it mechanically difficult to get k.-j., and also to observe it, but it seems likely that there is also involved in this apparent inhibition some physiological obstacle due to stretching of the muscle. The problem is one of great obscurity, and needs laboratory study.

Effect of acts of volition on organs functionally inert or on lost parts. When one of us willed to move his ear, over which he had no control, a considerable increase of k.-j. followed. Persons who have lost limbs often retain the power to will a motion of the absent member, and have then in their consciousness a sensory representation of such motion. It is very remarkable that these patients can never seem to themselves to make sudden, quick, or very complete movements of absent parts. It was needful to be sure that the stump was not moved. With proper precautions, the effort to move by will a non-existent part reinforced k.-j. distinctly in a case of loss of left arm at shoulder, and in a knee amputation. These results have value as proving that the reinforcement is not due to the muscular movement which, in the unmutilated, follows an act of will.

Elbow-, ankle-, and jaw-jerks. These obey as to increase from remote voluntary muscular acts the same law as do the motions due to knee-tap. The elbow-jerk is hard to obtain, but in one or two of our subjects was very good and was reinforced easily by willed toe movements, as also by those of the other hand.

The same remarks apply to the jaw-jerk[1] (chin-reflex), although this movement is not so readily shown in some subjects. This jerk is most easily obtained by allowing the jaw to hang passively, or by gently supporting it with one hand while with the other a blow is struck on the teeth or chin in a downward direction with the rubber hammer.

Effect of one tendon tap on another. Numberless experiments were made to learn if the one k.-j. reinforces the other. Thus we keep the right quadriceps extensor moderately excited by a series of quickly repeated blows on the tendon, and call out the most extreme k.-j. possible in the left leg. We do not add to k.-j. of its temperately excited fellow member.

The normal knee-jerk, ankle-jerk, and arm-jerk do not react on one another. All of these experiments as between the arm- and leg-jerks are difficult to manage, but easy enough as concerns the various leg motions.

The experiment of Jendrássik naturally led us to carry out, in regard to volitional movements, the investigations we have detailed; but we were quite unprepared for some of the phenomena which presented themselves, when we tested the effect of sensory stimulation on the k.-j.

Influence of sensations upon the knee jerk and other phenomena of like nature.

Touch. Mere touch or rough but painless contacts, which call out the well-known subcutaneous reflexes, do not influence k.-j.

Pain. This is a fertile means of reinforcement, as the following experiments show:

The subject being at rest, supine, with the right leg on the crutch, a series of equal blows, at regular intervals, is struck on the tendon. A second assistant takes hold of a hair on the thigh and twitches it so as to cause pain at the moment of one of the blows on the tendon. Nearly always this gives rise to a notable increase of the k.-j. If rapid blows,

[1] "The Chin-reflex: A New Clinical Observation," by Morris J. Lewis, M.D. Philadelphia Medical and Surgical Reporter, May 9, 1885, p 591. Read before the Philadelphia Neurological Society, March 23, 1885.

which keep the foot slightly extended, be used, the pull on the hair exaggerates the k.-j.

A needle-prick on the thigh or anywhere else on the surface of the body or limbs, below the neck, has a like influence, and is better seen when the hands are pained than the arms or trunk. Like hurts to the neck and face, and even more decisive hurts, such as a pull on the moustache, give little result. Needle-pricks are most efficient on the thigh of either side; but all of these phenomena vary with the individual; the efficiency of all such influences wears out after much repetition.

Sudden, sharp pain seems to act best. Chloroform burning is not available; but a sharp pinch of the skin of either leg or arm reinforces k.-j.

Heat. When heat is great enough to cause sudden pain it increases the k.-j., whenever used on arm, leg, or trunk, but as regards the face and neck in some persons it is efficient, and in others causes no response. The touch of a hot knife-blade on the thigh struck gives excellent results. If the heat used cover a large sensitive surface and is not great enough to cause pain, as when an assistant drops the passive hand of the subject into rather hot water, a good increase of k.-j. is observed.

Cold. Mild impressions of cold over limited surfaces cause no visible effect. The sudden application of water at 32° F. to the entire hand often strongly reinforces the k.-j., or a cold spray on leg, widely used. More remarkable are the effects of a jet of rhigolene spray on the skin of the thigh struck. At the moment of chill there is little effect; but when abruptly the part grows white and frozen, there is a momentary sharp painful sensation, and the k.-j. increases, and is exaggerated until the entire part thaws, after which, for a time, the k.-j. is below the normal of excitability. The same results may be had with rhigolene on the other leg, or either arm or hand. In one person, freezing of the neck or face, cheek, or temple, gave remarkable additions to the k.-j. In another, rhigolene freezing of the neck caused no obvious result.

Taste. Our experiments in this direction were limited to the effects of red pepper, salt, and vinegar on the k.-j.; the results were entirely negative.

Hearing and smell. No experiments were tried by exciting these senses.

Sight. When a magnesium wire is burned, and a succession of abrupt exposures of the eyes is made by moving a screen quickly to and fro, the first effects are not notable, but at the third or fourth, as the light becomes painful, there is a reinforcement of k.-j.

Effect on the knee-jerk of pressure on, and stimulation of the sciatic nerve. For some time we have noticed that if the thigh of the side to be investigated was supported by a staff, or by the arm being placed under it, so that the pressure came upon its middle third, the k.-j. was obtained with difficulty, or not at all. To investigate the cause of this, pressure was made upon the sciatic nerve in the middle third of the thigh with a tourniquet, for the period of fifteen minutes; this caused pain in the spot pressed upon, tingling, and, finally, numbness of the leg and foot.

During this experiment the k.-j. of the side experimented on rapidly diminished, until it could scarcely be obtained; while the k.-j. on the opposite leg remained unchanged. On several occasions, when the leg had gone to sleep from sitting in a cramped position, the k.-j. was tested, and always found to be less than that of the opposite leg.

These facts are curious, and rather at variance with some of our other experiments.

Even the encircling band produced by rolling up the pantaloons above the knee sometimes makes enough pressure to interfere materially with the k.-j.

To test the effect of direct stimulation of the sciatic nerve on the k.-j. a full-grown male rabbit was etherized, and the k.-j. found to be good; the sciatic of the opposite side was now carefully dissected out and severed from its muscular connections. Tetany of the extensor muscles of the untouched leg was now caused by taps on the tendon, and then the sciatic was stimulated by a current from a Du Bois-Reymond coil. With the coil as far out as thirty or twenty centimetres there was no appreciable effect on the k.-j., but with the coil at fifteen or ten centimetres there was a very marked reinforcement of k.j. This was verified over and over again, and the effect of the application was to make the k.j. more easily obtainable for some time afterward. The cord was then cut in the upper dorsal region, and the experiment was repeated with the same result. With the coil at five centimetres distance, the k.-j. was now evoked when the tap on the tendon was made with a thin piece of whalebone, so lightly as to cause not the slightest visible movement in the muscle.

Nitrite of amyl. The inhalation of nitrite of amyl carried to full flushing of the face appeared in no way to influence the k.-j.

Ether. Our experiments in this line were but few, and confined to animals. In dogs the k.-j. was not materially affected by light etherization after the first excitement stage was over, but full etherization entirely abolished it, and it was curious to witness the k.-j. come and go with the varying stages of anæsthesia. This was not so apparent in the rabbit.

(To be concluded.)

RESECTION OF THE LARGE INTESTINE FOR CARCINOMA.[1]

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THE resection of a portion of an intestine for disease of its coats has been performed in Europe some thirty-one times, but it is believed that the following case, the first successful one in this country, is sufficiently unique to justify me in asking the attention of this Society to a brief consideration of the subject. The details are as follows:

In October of last year, 1885, the patient, a tall, fully developed man of fifty-four years, was admitted to my wards in the New York Hospital, for the treatment of what he considered bleeding piles. He gave

[1] Read before the New York Surgical Society, January 26, 1886.

the history, that for two years past he had had daily six to ten bloody and painful passages from the bowels. During the tenesmus induced by these, there was at times a considerable prolapse of the rectum. There was found, by digital exploration of the rectum, one or two small quiescent internal hemorrhoids, and, in addition, at the distance of a finger's length, could be felt, obscurely, the lower surface of a hardened mass, which, under anæsthesia by ether, could, by bimanual examination, be outlined as an irregularly elongated mass, movable from one side of the belly to the other, and situated at the upper border of the pelvis. No pelvic or lumbar glands were found enlarged, nor was any visceral complication detected. The conclusion was arrived at, that it was tuberose carcinoma of the upper end of the rectum, inaccessible to operative procedures by the anus, but removable by laparotomy.

The condition of affairs, and the risks attendant upon such an operation, were laid before the patient, who was a man of unusual intelligence, and who, after deliberation, determined upon submitting to the operation. This was therefore done on October 22d, under full antiseptic precautions, and in the operating room of the hospital devoted to abdominal sections.[1]

The diet of the patient was restricted for forty-eight hours previously to semi-fluids such as milk, bread, and eggs. An enema induced defecation a few hours before the laparotomy, and the urine was passed just before the etherization. Under a carbolic spray (which, in certain operations involving the cavity of the abdomen or a joint, I still prefer), an incision four inches long was quickly made from one inch below the umbilicus downward, and the peritoneum reached, seized and lifted between two clamp forceps, opened, and divided to the full extent of the wound by straight scissors. The intestines, as was hoped, were undistended, and three fingers of the left hand were then carried into the peritoneal cavity, the tumor readily caught and drawn out of the belly wound after some depression of the abdominal walls, and surrounded by flat disinfected sponges. It was a knobbed mass four inches in length, and its upper edge reached nearly to the sigmoid flexure of the colon. Temporary ligatures of heavy, soft, sublimated silk were carried through the mesorectum, above and below the mass, and the intestine, for a distance of five and a half inches, including the tumor, cut off, and removed after tying off the mesorectum by several ligatures of silk parallel to the bowels, dividing it as far from the latter as possible. In the stump thus made after extraction of the neoplasm, were seen two small enlarged glands; these were dug out, and a further portion of the mesorectum cut away after being duly ligated.

The important point as to whether a reunion of the divided intestine should be had, was decided negatively, and the creation of an artificial anus determined on for the reason, that though the cut ends could be easily apposed, yet, in spite of all the care that might be exercised, leakage would be apt to occur. Reichel found this had happened in 31 instances out of his 121 collected cases of intestinal resection; in 13 of these it caused death, in the others, fecal fistulæ resulted.[1] Moreover, the junction would have to be made deep in the pelvis, some four and a half to five inches from the anus, where the safe suturing of the bowels was felt to be a matter of extreme doubtfulness.

This was fully verified when, after the above decision was acted upon, the inversion and closure of the lower end of the bowel were attempted. Great difficulty was encountered in placing the double row of serous sutures (Czerny-Lembert) after the preliminary suture of the mucous membrane, and a third row was required at the posterior part to effect a satisfactory dimpling in of the bowel. And lastly, the chance of local return of the growth influenced me in preferring the establishment of an artificial anus.

This was accordingly done by carrying the upper divided end of the gut into the superior angle of the wound and allowing it to protrude, so that the part encircled by the temporary ligature (which was then cut away and a few bleeding points secured) should be outside the peritoneal cavity, in the event of any ulceration from its transient constriction. It was there fastened by three or four sutures, and the abdominal wound, after a fresh inspection and testing by sponges had shown that the peritoneal toilet had been properly made, was closed by strong catgut sutures, first passed through the whole thickness of the belly wall, but not tied till afterward, then the peritoneum itself was brought together with a continued catgut suture, and lastly catgut was passed through the skin and muscle to the peritoneum. This method of closure has been found best to avoid the formation of mural abscesses, but does not entirely get rid of, I regret to say, the smaller stitch abscesses. A sublimated gauze dressing on which iodoform was dusted was applied to the wound, and over that a large mass of absorbent cotton and a firm body bandage.

From the time of the operation until the 27th Oct. (five days), the patient complained severely of pain on each side of the wound, with occasional hiccough, and during the last twenty-four hours increasing distention of the abdomen occurred. His pulse however ranged below 90, and the temperature was less than 100°. Two of the deep stitches were cut to ease the tension of the swelling and to relieve the commencing tympanites. An evacuation of the bowels was solicited by gently introducing through the artificial anus a soft rubber catheter and carrying in several ounces of warm water. No immediate effect resulted. He was therefore ordered the next morning to take two ounces of Hunyadi Water.

On Oct. 28th, on removing the dressing, as his bowels had moved painlessly under the action of the cathartic, it was found that the wound was open throughout its whole extent, and in the mass of feces filling it was seen a coil of small intestine. After carefully wiping away the feces it was per-

[1] This is a small special room with the walls rounding into the ceiling, thickly painted, so that all the room and its few contents can be washed previously to an operation with, first, soft soap and water; secondly, with a solution of sublimate, 1:1000; and then, thirdly, for two hours bathed with the fumes of burning sulphur.

[1] Deutsche Zeitschr. für Chirurgie, No. 19, 1884.

ceived, fortunately for the patient, that adhesions existed sufficiently to shut off the general peritoneal cavity, which fact allowed thorough cleansing and washing of the bowel, and its reposition in place, when the wound was sewn up with three wire sutures passing down to, but not through, the peritoneum, the adhesion of which to the intestines beneath rendered this latter impracticable and unnecessary. No reaction followed this mishap. The patient's general condition steadily improved, with evacuations from the bowel once or twice a day, which, in spite of the impermeable dressings contrived, so frequently entered the wound as to preclude secondary union, and its healing proceeded by granulation to completion in about seven weeks, with a firm, unyielding scar.

From November 4th to 13th: Though progressing favorably, he had occasional pain in the belly and slight temperature elevation, up to 101° at night, without sweating or chills, and very little pelvic tenderness.

On Nov. 14th I was informed that he had had during the previous night a fecal discharge from the anus. It had been thrown away by the nurse, but was reported as being of ordinary character and very soft. This was thought to have been mainly the contents of the rectum, left in at the time of the operation. On the 15th, considerable flatus was passed *per anum*, and on the 16th he discharged by the same orifice nearly a pint of dark brown fluid of a strongly fecal odor, greatly to his relief.

Speculation on the possible source of a fecal or flatulent discharge took several directions, two of which seemed probable. The first was, that during the last transfixion of the mesocolon by a doubly threaded needle, the point of this instrument had suddenly struck and torn an adjacent loop of small intestine, quite through to the mucous membrane. The slit was promptly sewn up by several Lembert sutures. This might have given way and discharged itself per rectum.

The second possibility was this: it was noticed after the second slice of the mesocolon had been removed, that the triangularity of this tissue had not been preserved, and that the portion of the bowel leading from the proposed artificial anus, for three inches, had a somewhat scanty mesentery. Its truncation to avoid gangrene from a defective blood-supply was discussed with my colleague, Dr. Bull, but on holding the mesocolon up to the light, the vessels going to it seemed to be large and numerous, and hence it was preserved entire. It was possible that a spot of gangrenous intestinal wall from this cause might thus have allowed a fecal extravasation to be conducted externally by the disused rectum.

No further discharge took place until November 20th, when two ounces of a thin, light brown, markedly purulent fluid were discharged *per anum*. On the introduction of the finger into the bowel the upper limit of it could not be felt, and a rubber drainage tube was thereupon passed in at least six inches, giving vent to three or four ounces of very fetid brownish pus. The tube was left *in situ* covered by sublimate gauze, and the next day, and daily thereafter, the abscess cavity was washed out through it, at first with a 1 : 5000 sublimate solution, and then 1 : 10,000, and finally, with Hey's solution (sulph. zinc, gr. ij; spts. lavand. co., ʒj; aquæ, ʒj). This discharge ceased in about three weeks. The rectal tube was worn ten days without discomfort.

It was evident that the above hypotheses were all wrong. The abscess, I think, was formed from some hemorrhage or from the stump enclosed by the silk ligatures, which made a mass uncovered by peritoneum, nearly two inches long, by three-quarters broad. This had been dusted by powdered iodoform before the abdomen was closed, and on reflecting on the operation, even before the disclosure of the abscess, it was felt that it would have been wiser surgery, in similar circumstances, to have left in a drainage tube. During the evacuation of this purulent collection the patient complained sorely of pain over his liver, and this was found to be enlarged. As the cessation of pus formation took place, the hepatic tenderness disappeared, though the increased dulness on percussion remained. Whether this signifies a secondary deposit in that organ, I cannot yet say, though I fear it may so culminate.

He left the hospital for his home, in Scranton, Pa., January 2, 1886, rapidly gaining in strength and flesh, and controlling the discharge from the artificial anus better by a simple plug of cotton or gauze secured by a strip of adhesive plaster, than by the many other expedients which were suggested, and in other cases successfully tried. The pathologist's report of the tumor pronounced it one of encephaloid cancer.

Remarks.—I have been able to collect thirty-five cases in which excision of a cancerous intestine has been resorted to, and in all save one (Schede's) the disease has involved the large intestine; in an additional case (Credé's) the operation was abandoned, only a small piece being removed for microscopic examination. Of this number, it is to be noted that of the five cases[1] in which the operation was done during the exhaustion attendant upon an acute obstruction of the bowel, all died from the shock of the operation, hence this condition is considered by Schede to contraindicate the operation. Of these 33 cases (for in one, No. 18, the result is unknown) there was a mortality of 17, or 51.5 per cent., only a little greater than that which results from resection of the large intestine from other causes,[2] and which is given in Maydl's recent article on the subject at 50 per cent. Aside from the shock, ten died within forty-eight hours; in a number of cases, the progress was complicated by the escape of feces, as shown at the autopsy (four died from peritonitis from this cause), or by the presence of an intestinal fistula. When the latter occurred in the course of an otherwise favorably progressing case, it, as a rule, closed later spontaneously. This escape of the intestinal contents was due either to a faulty suturing, or to the minute gangrene so apt to take place from slight unperceived stripping up of the mesocolic attachments. For the sutures, silk or catgut was used, and though,

[1] Thiersch, Gussenbauer, Schede, Guyon, Treves.

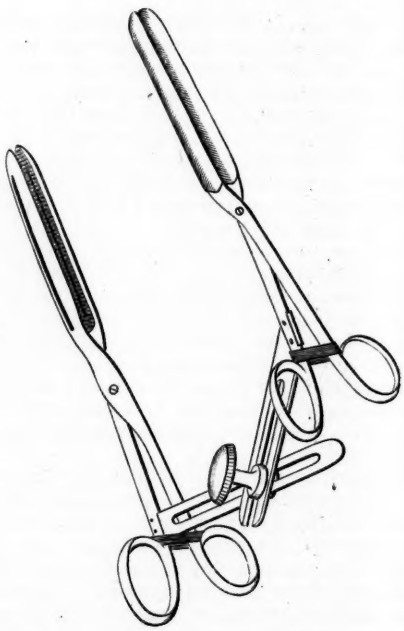
[2] In six resections, for two gangrenous herniæ, three prolapsed artificial anus, and one cicatricial stricture, there were three recoveries—Maydl: Beiträge zur Darmchirurgie, Wien. med. Zeitung, 41, 42, 43, 1885.

in the majority of cases the usual interrupted suturing of first the mucous membrane, and then the double rows of the peritoneum, known as the Czerny-Lembert suture, was resorted to, yet Schede, among others, recommends strongly the continued suture, one to the mucous membrane, and two to the serous coat (and, as he prefers, with sublimated gut), as amply sufficient, and, what is of more consequence in a prolonged operation such as this is, with the saving of one-half to three-quarters of an hour's time. This more careful closing of the opposed mucous membrane is also of service in preventing fecal extravasation between this and the muscular coat (Maydl).

With the possibility of such a mishap, after uniting the ends of the intestine, and especially in the case presented, where there is left much of an uncoverable subperitoneal surface, I would be strongly disposed to use hereafter, should an occasion offer itself, a glass or rubber drainage tube, to avert, if possible, the risk likely to arise. If it were, however, possible to keep the joined intestine after a resection outside the peritoneal cavity until union had taken place, the ideal would be fulfilled, and all risks from intestinal leakage would be obviated; but as this is difficult, from the kinking of the loop of bowel at the line of suture, and from its congestion by the constriction of the abdominal wound, Maydl has successfully carried out in his last cæcum extirpation, the suggestion[1] that the belly wound should be kept open after securing the peritoneum to the skin, and the united intestine held up to it by one or two loose sling sutures carried through the mesentery. The protrusion of intestinal coils was prevented by iodoform compresses placed in and over the wound until adhesions formed. This takes place rapidly, and both in Maydl's case and in my own the unintentional similar treatment of the wound has shown the feasibility of the plan.

The variation in the site of the incision in the abdominal wall, to revert to the *technique* of the operation in its proper order, was not great; usually, it was made in the median line. In resections of the cæcum and sigmoid flexure, Maydl and Billroth incised either parallel to Poupart's ligament, or from the umbilicus to the same ligament, or to the outside of the rectus and low down. For tumors of other parts, the mobility of the intestine permitted the use of the usual laparotomy section. Great difficulty was a few times felt from the considerable distention of the bowel, above the tumor; but in nearly all these instances it was possible, either by traction alone, or by combined depression of the abdominal walls, to bring the tumor outside the peritoneal cavity, where sometimes it could be shut from the latter by a partial temporary closure of the abdominal incision, or by carefully placed flat warm sponges or compresses of iodoform gauze. Where practicable, it has been found better first to tie off the mesocolon in small sections, and divide it from its attachments to the diseased intestine, and then to remove the portion of bowel determined on. Gussenbauer preferred to divide the intestine below and between a double ligature, and did not cut above the tumor until all the mesocolon was severed, but this plan has not been usually followed.

Whether the gut be divided prior to, or subsequent to the mesocolon, its ends have easiest, and most frequently, been secured by the various operators either by the fingers of an assistant, or by a not too tightly applied temporary ligature of silk, as in my own case, or what I judge the best so far, by tape-like strips of antiseptic gauze, such as have been employed by Billroth. Rydygier's clamp, which, it will be remembered, consists of two rods covered with rubber tubing, between which the intestine rests and is held compressed, by rubber bands encircling the ends of the rods, has been successfully used, but the clamp of Treves[1] has been abandoned by its author, in favor of Bishop's.



The latter instrument is too complicated, and of all the mechanical contrivances for the purpose, I would give the preference to that of Dr. Abbe, of this city, of which a diagram is annexed.[2] The blades of this instrument are covered with several layers of flannel, instead of rubber tubing, and thus afford a surer hold, and the compressing power at the handles is effected by thin bands of rubber. It also readily allows of a change of position, and rapid elongation and shortening. In passing the temporary ligatures, a spot in the mesocolon devoid of vessels can often be chosen, and is to be preferred.

After the removal of the diseased mass, a careful

[1] Reichel is opposed to this method of treatment, and says the sutured intestine should be fully returned, and the wound closed without a drainage tube, which is superfluous, as is also the fixation of the sutured gut.

[1] See diagrams in Treves on Intestinal Obstruction, pp. 481, 842.

[2] Manufactured by W. T. Ford, New York.

search should be made in the severed mesocolon for diseased glands, which can usually be easily removed. The question which then comes into the mind of the surgeon is, whether a reunion of the divided ends of the intestine, or an artificial anus with both ends in the wound if practicable, should be made. This point has already been touched upon in the narration of the case which forms the basis of this paper. In most of the cases in which recurrence was noticed, it took place locally, either renewing the stenosis by the involvement of the bowel itself, or producing the same through pressure from a growth in the parts adjacent. This reproduction of the neoplasm was observed in two cases in the site of the artificial anus, and admitted of partial relief by stretching, etc. The objection raised, that by waiting to perform a subsequent resection of the intestine for the false anus created by the first operation, an additional risk is run, is not so weighty as it at first seems, since the investigation of Reichel shows that in thirty-seven resections of the intestine for the relief of an artificial anus, only two deaths resulted. The fact that in the eight cases where an anus was thus produced, death resulted in five, should not be interpreted that this plan of action is necessarily a more fatal one than is resection of the bowel, for not only are the cases too few to dogmatize upon, but also in more than half of these instances the anus was made because the parts removed had been so extensive as to render impossible the union of the divided ends of the bowel, and the operation itself thereby rendered more hazardous.

The conclusion already stated is, therefore reiterated, that in an intestinal resection for a malignant neoplasm, it is wisest to establish an artificial anus.

Only a reference need be made in this connection to the lumbar incision for the removal of intestinal growths. This has only once been resorted to, with fatal result, by Lammiman, who, after taking away the tumor, brought out the lower end of the colon in the wound after placing a ligature around the lower end of the bowel, and dropped it in the abdominal cavity. Bryant's case, which preceded this, recovered. It was the result of the accidental opening of the colon in an ordinary colotomy immediately below the seat of the malignant stricture. This was detected and drawn out of the belly, and four inches cut off, and the two ends of the bowel fastened in the lumbar wound. I see but little to recommend in this procedure, as its scope must be confined to a very limited topographical region, though it has the endorsement of so excellent an authority as Treves.

A much more important consideration after all, is whether such hazardous operations are justified for the removal of malignant growths. In common with other surgeons, I feel the discouragement that attends endeavors to give relief, or to prolong life, and most remotely, to effect a cure in such conditions. The operation with which this more recent extirpation of abdominal growths has been compared, is lumbar colotomy, which is, however, merely a palliative one, and, according to the rich experience of Allingham, not effectual in prolonging life. Its risks, too, are, I think, made light of.

The large statistics of Erkelen,[1] embracing 262 cases of colotomy for all causes gave a mortality of 58.4 per cent., and for 110 cases of carcinoma 37.7 per cent. of deaths. The cases of recovery after resection of the intestine for a neoplasm, are too few to place with those of colotomy, and can only be fairly considered with the first cases of the allied operations of extirpation of the rectum and of the uterus by the vagina for cancer, both of which have now come, by increased experience, to have an acknowledged standing in surgery, and a diminished mortality from improved methods of operation, and judicious care in the selection of cases. To me, I confess, the fact that one can hope to have room enough in the intestine and mesentery to get wide of the tumor, is an advantage not possessed by any of the abdominal operations for malignant growths, except in ovariotomy, and in the belief that the dangers that come immediately from the operation can be more and more satisfactorily coped with, I venture to commend, in this brief paper, the resection of such intestinal tumors with, as a rule, the establishment of an artificial anus.

But a careful diagnosis must be made under ether to determine the mobility and freedom from adhesions of the growth, and the absence of pronounced glandular involvement. The interrogation of the organs, as, for example, the liver, in which secondary deposits are most likely to occur, should be strict, not only by palpation and percussion, but also by the newer corroborative chemical tests of urea diminution, and peptone increase, etc.

The operation should generally be begun as an exploratory one, with Tait's statement in mind, that it is harder to know when to desist than to go on. If the tumor is an unfit one for extirpation, an ordinary artificial anus can be made either in the exploration wound, or in the groin. This has been done, after Littré's plan, for carcinoma, in 23 cases, and has given a mortality of 39 per cent.[2]

I have appended a table comprising the collected cases. These are interesting in several points other than those touched on in the foregoing remarks. In respect to one—the recurrence, a few words may be added: in 10 of these, where the fact of recurrence is noted, it took place in 3 cases (Czerny, Kraussold, Billroth) in less than one year; in 4 others (Reybard, Maydl, Volkmann, Bryant) between one and two years; and in one case (Fischer's) over two years, and in Gussenbauer-Martini's case the patient was free from disease at the date of our last report, four years after the operation. In Schede's, where a laparotomy was unsuccessfully done for intestinal obstruction, nine months after the resection and reunion of the intestine for cancer no trace of the recurrence of the neoplasm was found, and the interesting point was also developed that the turning inward of bowel by the Czerny-Lembert sutures had not given rise to any permanent projection into the lumen of the gut, only a simple linear cicatrix being perceived.

[1] Archiv f. klin. Med., Bd. xxiii. Heft 1.
[2] Erkelen, op. cit.

TABLE OF RESECTIONS OF THE INTESTINE FOR MALIGNANT GROWTHS.

No.	Operator, and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, etc., of abdominal wound.	Result.	Where reported.
1	Reybard,[1] 1843.	Carcinoma of sigmoid flexure.	3 inches.	Sutured and returned.	6 inches long, above crest of ilium. Wound united by 3 sutures.	Recovery; 10th day movements from bowels. Recurrence 6 months later, and death 1 year after operation.	Bull. Acad. de Méd., t. ix. p. 1033.
2	Thiersch,[2] 1875.	Carcinoma; acute obstruction.	Not stated.	Lembert's suture, intestine united and returned.	Linea alba.	Died in 12 hours, septic peritonitis.	Deutsche Gesellsch. f. Chir., 1878, Bd. vii. S. 127.
3	Gussenbauer, Dec. 6, 1877. Man.	Carcinoma of colon; adherent also to small intestine; acute obstruction.	3 inches.	Ends united by Lembert and Gussenbauer suture; wound accidentally made in small intestine clos'd by 3 sutures.	Linea alba, and a second one transverse to this.	Died 15 hours after operation, from collapse.	Archiv f. klin. Chirurg., 1878, Bd. xxiii. S. 233.
4	Schede.	Carcinoma of descending colon.	None removed; disease found too extensive; intestine cut off.	Ends sutured to wound as they could not be approximated.	Over tumor on left side.	Died in 24 hours from inanition; no peritonitis.	Deutsche Gesellsch. f. Chir., 1878, S 126.
5	Billroth, 1879. Woman, 60.	Carcinoma of descending colon at transverse flexure.	Not stated.	Enormous distention of bowels; artificial anus made, as it was impossible to unite ends, why not stated. Lower end closed and left in. To replace intestines incisions made to let out flatus, which were afterward sewn up.	.....	Died in 24 hours.	Hauer, Zeitsch. f. Heilkunde, 1884, S. 83.
6	Gussenbauer and Martini, Nov. 9, 1879.	Carcinoma of sigmoid flexure and mesocolon.	4 inches.	Lower end turned in on itself; sutured and returned to pelvis. Upper end made an artificial anus in superior end of w'nd.	Over tumor in left side of abdomen.	Recovered; in 2 mos. resumed work. Reported by Schede in 1883 as still free from disease.	Petit, Bull. Gén. de Thérap., t. ciii. 486, from Zeitschr. für Heilkunde, Bd. i. S. 208.
7	Guyon, Nov. 23, 1879.	Cylindrical epithelioma at juncture sigmoid flexure and rectum.	2½ inches.	Ends united by 15 sutures, and bowel replaced.	Linea alba.	Movements followed immediately: died in 3½ hours.	Petit, Bull. Gén. de Thérap., t. ciii. 537, from Peyrot, De l'intervention chirurgicale dans les obstructions de l' intestines.
8	Baum, Jan. 13, 1879.	Carcinoma of ascending colon. Fecal fistula made 8 weeks before operat'n above Poupart's lig. on right side in small intestine, to allow escape of gas, which prevented use of percussion and palpation.	3 inches.	End of upper intestine being longer than that of the lower end, the former was made smaller after Billroth and Czerny's method, a wedge-shaped piece directed outward being made by 6 stitches. Ends then united with carbolized silk, Gussenbauer's sutures. Gut returned.	Incision 3 inches long over tumor, 1 inch below ribs, 3 inches to right of median line. Supplementary incision 2 inches long from middle of first, running to right. Wound united with silk.	5th day soft movement died 9th day; no peritonitis: sutures gave way.	Centralblatt für Chirurg., 1878, vol. vi. p. 169.
9	Kraussold.	Carcinoma sigmoid flexure.	Not stated.	Sutured.	.....	Recovered; died 6 months later of recurrence in mesentery.	Sammlung klin. Vorträge, 191, S 1724.
10	Kraussold, April, 1879.	Carcinoma ileocæcal valve, cæcum, and vermiform process.	.....	Joined by Lembert's sutures, silk.	As for ligation right external iliac.	Died of shock in 2 hours.	Centralblatt für Chirurg., 1881, vol. viii. p. 186.

[1] The report of this case being made to the Academy of Medicine, it was referred to a committee made up of Blondin, A. Bérard, Jobert de Lamballe, to whom Reybard detailed his experiments upon dogs, previous to his operation. Seven dogs were operated upon by the commission, four surviving; but the committee sent in a report against the operative innovation of Reybard.

[2] In Thiersch's resection about a quart of fecal matter came out of distal end. When this appeared empty, he began to unite ends with Lembert's suture, and before he had finished a peristaltic movement forced a large amount of feces out, and a part entered abdominal cavity. He then made an artificial anus above the operation wound, allowing free exit to the feces, after which he finished suturing gut.

TABLE.—*Continued.*

No.	Operator, and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, etc., of abdominal wound.	Result.	Where reported.
11	Czerny, 1880.	Carcinoma of transverse colon and sigmoid flexure.	3 inches of sigmoid flexure, and 4½ ins. of transverse colon.	Cut ends of sigmoid united by 33 sutures. colon by 26.	4½ inches long over tumor in left hypochondrium. United by deep and superficial sutures; drainage.	Recovered; movement 10th day after injection. Abdominal wound opened, and healed in 4 mos. but recurrence began and patient died at end 7 mos, 11 days.	Petit, from Berl. klin. Wochenschrift, 1880, 638.
12	Credé, 1880. Incomplete operation.	Carcinoma of intestine.	.....	Only a portion of tumor removed for microscopic examination; it was found to have many foci.	.....	Recovered.	Archiv f. klin. Chir., Bd. xx. S. 293.
13	Wittelshoefer (Billroth), July 1, 1880.	Carcinoma of sigmoid flexure.	9 inches.	Lower turned in and sutured, upper sutured to upper end of wound.	To left of median line with convexity extended. Sutured from below up to artificial anus.	Died in 14 hrs. from general peritonitis and endocarditis.	Wiener med. Woch., 1881, S. 185.
14	Fischer, Feb. 24, 1881.	Carcinoma of descending colon.	Nearly 3 inches.	United by Czerny's suture, and then fixed by a suture in lower end of abdominal wound.	Linea alba, upper ¾ closed, lower ¼ left open.	Movement 1 hr. after operation from rectum; 8th day feces came from abdominal wound, and fecal fistula formed here. Patient discharged on Oct. 19th (8 mos. after operation) cured, with no sinus. Since dead. (Schede, 1883.)[1]	Centralblatt für Chirur., 1881, Bd. viii. S. 794.
15	Bryant, Sept. 10, 1881.	Alveolar carcinoma of descending colon	About 4 inches.	Upper end made into artificial anus; lower closed, and sewed to lower end of wound.	For left lumbar colotomy; stricture found above wound thus made, and pulled down, excised; lower part closed; upper made into art. anus.	Recovery; movements during operation. Aug. '82, doing well; there had appeared recurrence at opening 1 year later, which demanded stretching.	Medico-Chir. Trans., vol. lxv. p. 131.
16	Nicolaysen, March 1, 1881. Woman, 49.	Carcinoma, sigmoid flexure prolapsed beyond anus.	.....	While protruding beyond anus it was removed with its mesentery.	Removed per rectum.	Recovery; 2½ mos. later reported well.	Nord. Med. Ark., iv. No. 13. 1882, Centralb. f. Chir., No. 36, 1882.
17	Von Wahl, 1882? Woman, 26.	Colon adherent to cancer of ovary and infiltrated with neoplasm.	4 inches.	Colon sutured together, Gussenbauer, Lembert; clamp to hold end intestine.	....	Recovery; though recurrence took place in a month.	London Med. Record, Apr. 15, 1883.
18	Bergmann, 1882. Man, 40–50.	Carcinoma cæcum.	?	Cæcum and small intestine sutured together.	Median incision.	?	Oral communication from Dr. E. M. Culver, who witnessed the operation.
19	Billroth, Aug. 20, 1881. Man, 56.	Carcinoma cæcum.	Cæcum and part of ileum.	Colon reduced in size by 11 "occlusive" sutures, and then united to small intestine by 11 Wölfler and 19 Lembert sutures.	From umbilicus to middle of Poupart's ligament.	6th day stercoraceous vomiting; wound opened; cause not found; artific'l anus then made. Died; no autopsy.	Hauer. Zeitschr. f. Heilkunde, 1884, S. 83.
20	Billroth, Oct. 18, 1881. Woman, 29.	Carcinoma both ovaries, involving intestine and bladder, both of which were resected.	5 inches.	Ends united by 5 Wölfler and 9 Lembert sutures and replaced; gut held by assistants.	Median line.	Recovered; bowels moved on 10th day.	" " "
21	Marshall, April 15, 1882.	Carcinoma descending colon	3½ ins.	Lower end cleaned with sol. zinc chloride, and sutured to skin wound by silk sutures through serous and muscular layers, and gut sutures through all 3 coats; lower end ligated with gut and fastened in wound.	Wound in median line closed with silk; lateral wound made artificial anus; first incision made in median line just below umbilicus to pubes; supplementary incision 3 inches long, parallel to last rib of left side, 1½ in. above crest of ilium.	Movement during operation. Died 3d day, diffuse suppuration.	Lancet, 1882, p. 721.

[1] Reichel, in Deutsche Zeitschrift für Chirurgie, No. 19, 1884, p. 251, reports that this patient presented herself at the clinic in Breslau, June 5, 1882, with recurrence at site of former fecal fistula. In removing this two coils of large intestine were found adherent to growth and to abdominal wall. It was thought unwise to resect these intestines, and after removing the recurrence in the abdominal wall, the wound was closed and united primarily. During October, November, and December, fecal fistulæ and abscess formed between umbilicus and symphysis, and patient died January 9, 1883.

TABLE.—*Concluded.*

No.	Operator, and date.	Disease.	Length removed.	Treatment of resected intestine	Situation, etc., of abdominal wound.	Result.	Where reported.
22	Volkmann.	Carcinoma upper part sigmoid flexure.	4 inches.	Artificial anus made; both ends brought into wound.	?	Recovery; reported in 1884 as dead from a recurrence of cancer 1½ year after operation.	Centralblatt f. Chir., No. 10, 1883.
23	Maydl, April 1, 1883. Man, 54.	Cancer cæcum.	Cæcum and small intestine removed, 7 ins. in all.	Artificial anus made, and 6 months later closed by reuniting intestine after a further resection of 2 inches.	Outside of rectus; drainage after resection of fecal fistula, which slowly contracted, but did not heal.	Recovered, though since dead from recurrence 1 yr. later.	Wiener med. Presse, April, 1883.
24	Czerny.	Carcinoma cæcum and part of duodenum.	.....	.....	.....	Died.	Centralblatt f. Chir., No. 30, 1883.
25	Schede, June, 1883. Man, 50.	Carcinoma of small intestine attached to abdominal walls, tumor size of man's fist.	8 inches, mesenteric glands also removed.	Temporary ligature, ends united by single mucous and double row of serous sutures, all continuous and of sublimated catgut.	Median laparotomy.	Recovered; movement from 1st day; 9 mos. later intestinal obstruction from a band; laparotomy; death; no recurrence found.	Beilage zum Centralblatt f. Chirurg., 1883, p. 66.
26	Partsch, July 14, 1883.	Carcinoma of small intestine	3½ ins.	Sutured with silk passing through serous and muscular coats to middle of wound; ligature left about lower end of gut when stitched to wound.	From umbilicus to symphysis closed, except for 2 inches in centre, where peritoneum was sutured to edge of wound, and both ends of gut were secured.	During operat'n movements carefully kept from abdominal cavity; doing well on 4th day, except delirium, in which patient jumped out of bed and tried to escape; death 5th day, exhaustion.	Centralblatt für Chirurg., 1883, No. 52, S. 833.
27	Lammiman, Feb. 14, 1883.	Scirrhous carcinoma of descending colon	Not stated.	Upper end sutured to wound; lower end ligated with carbolized silk; gut returned to cavity.	As for left lumbar colotomy; closed to artificial anus.	Died in 48 hours from exhaustion; movement in a few hours.	Lancet, 1883, Aug. 4, p. 182.
28	Treves.	Cylindrical epithelioma of descending colon.	Not stated.	Ends united by 25 Lembert sutures, not including serous membranes; uses Chinese twist silk; divides mesentery from the gut.	Median line.	Died in 12 hours without stool, from shock and exhaustion.	Med. Chir. Tr., 1883, vol. lxvi. p. 55.
29	Billroth, Jan. 28, 1883. Woman, 56.	Carcinoma of transverse colon.	6 inches.	9 inner and 27 Lembert sutures; tumor adherent to anterior abdominal wall.	Drain used.	7th, fecal fistula developed, which closed on 14th day; recovered; reported herself well 10 months later.	Hauer, Zeitschr. f. Heilkunde, 1883, S. 83.
30	Billroth, Mar. 23, 1884. Man, 55.	Carcinoma of cæcum size of apple.	2¾ ins. of colon, 1½ ins. small intestine excised, after tying intestine tempor'rily with broad strips iodoform gauze	Ends joined with 22 sutures.	6 inches long, just outside right linea alba; drain used for 5days.	Recovered; 6th day bowels moved.	" " "
31	Sydney Jones, May 23, 1884.	Scirrhous carcinoma of ascending and transverse colon.	Not stated.	14 silk sutures through whole thickness of gut joining ends; "others" through serous coat alone, one fastening serous coat to abdom. wall.	Over tumor 5 inches; vertical direction; closed, except in centre, here packed with gauze (iodoform).	Died 3d dy. No movement; exhaustion; no peritonitis, but "dirty looking pus had infiltrated tissues" at juncture of mesentery and gut.	Lancet, Jan. 10, 1885, p. 60.
32	Hofmokl, April, 1885. Woman, 24.	Malignant adenosarcoma of cæcum.	9½ ins. ends secured with 3 rows sutures; drained.	Curved 5 inches from rectus, exposing tumor.	.....	Recovery; movements 5th day.	Anzeige der k. k. Gesellschaft der Aertze in Wien, May 1, 1885.
33	Lange, 1885.	Carcinoma of flexure and ascending colon.	4 inches.	Ends united with difficulty; duodenum wounded and sewn up.	.....	Died 2d day.	Oral communication in discussion on this paper.
34	Lange, 1885. Woman, 32.	Sarcoma of transverse colon, with sarcoma of both ovaries.	6 inches.	Ends sutured by Czerny-Lembert method.	Median.	Died 9th day from perforative peritonitis; diarrhœa persisting from time of operation.	" " "
35	Weir, Oct. 22, 1885. Man, 54.	Carcinoma of sigmoid flexure, lower end.	5½ ins.	Temporary ligatures; artificial anus made; rectal end closed.	4 inches; median.	Recovery; left hospital Jan. 3, 1886, gaining flesh and strength; recurrence probable.	This paper.

ANOMALOUS LOBATION OF THE HUMAN LUNG.

BY D. S. LAMB, A.M., M.D.,
OF WASHINGTON, D. C.

AN article by Dr. Wm. A. Edwards, entitled "An Anomalous Human Lung, having Four Lobes on the Right Side," published in *The American Journal of the Medical Sciences* for July, 1885, has led me to look over my record of necroscopies; and I note the following anomalies observed in the lobation of the lungs:

January 10, 1866: Man, aged 25, colored. Left lung composed of three distinct lobes.

April 13, 1866: Man, aged 26, colored. Right lung composed of but two lobes.

May 5, 1866: Girl, aged 10, colored. Left lung composed of three lobes, distinctly marked.

June 18, 1867: Man, aged 45, white. Right lung contained an imperfectly formed middle lobe.

May 1, 1874: Man, aged 64, white. Right lung contained an upper and lower lobe, and two irregularly formed middle lobes.

November 6, 1881: Girl, aged 15, mulatto. Several congenital fissures of left lung

November 20, 1881: Man, aged about 40, white. Left lung contained three lobes.

March 29, 1882: Woman, aged 25, mulatto. Right lung; rudimentary additional lobe derived from lower lobe.

April 3, 1882: Man, aged 48, mulatto. Right lung contains but two lobes, and a white line marking out the third.

November 5, 1882: Boy, aged 19, mulatto. Right lung; middle lobe imperfectly separated from lower by line of thick connective tissue.

October 25, 1883: Man, aged 40, colored. Left lung; subdivision into lobes incomplete.

January 26, 1884: Woman, aged 25, mulatto. Right lung consisted of two lobes.

November 5, 1885: Man, aged 75, negro. Right lung; four lobes, two middle ones.

An analysis of these thirteen cases shows that the anomalies were found in nine males and four females; ten colored and three white. In 100 consecutive examinations there were about 60 males to 40 females; and 70 colored to 30 white. The anomalies were, therefore, relatively more frequent in the male sex and colored race. The number, however, is too small to warrant generalization; and besides, some of the bodies were as much *white* as *black*.

In five cases the right lung consisted of two lobes. In two of these the middle lobe was marked by a *line* of connective tissue, uniting it with the lower lobe; and in a third the condition may have been similar, the note made being that the middle lobe was imperfectly formed.

In three cases the right lung presented four lobes. In two of these there were two middle lobes. I recollect that in one the two middle lobes were side by side. In the third case the additional lobe was derived from the lower lobe.

In three cases the left lung showed three distinct lobes.

In one the left lung presented multiple fissures.

In one, the left lung, the subdivision into lobes was incomplete.

The record does not state, and I do not now remember, the relation of the primary bronchi or bloodvessels to the number of lobes. I have, however, attached less importance to an inquiry in this direction, because in so many of the lower animals there is, apparently, no law bearing on this point, at least as to the bronchi. As an instance, the dolphin, Delphinus Delphis, shows two primary bronchi going to the right lung, which is not lobed at all. Aeby, in his *Der Bronchialbaum*, etc., Leipzig, 1880, Tafel 2, Fig. 3, shows this well; and a specimen of the same came under my notice only a few weeks since.

ARMY MEDICAL MUSEUM, WASHINGTON, D. C.

MEDICAL PROGRESS.

LOCAL SEDATIVE FOR TEETHING OF INFANCY.—BOUCHUT recommends the following formula for use in painful dentition:

℞.—Cocaine muriate	1 part.
Sodium borate	1 "
Syrup of marshmallows	20 parts.
Syrup of poppies	10 " —M.

S. Gently rub the gums with the syrup four times daily.—*L'Union Médicale*, Jan. 9, 1886.

A NEW SPIRILLUM.—At the last meeting of the Medical and Physical Society of Bombay, held September 4, the President, Dr. H. V. Carter, showed specimens of a new spirillum (or spirochæta) which he had found in the blood of an Indian rat. The organism is minute, yet of characteristic aspect and activity; so far as yet learned, its occurrence in the blood does not produce recurring pyrexia or other peculiar symptom.—*Indian Medical Gazette*, December, 1885.

ANTHRAX VACCINATION IN RUSSIA, hitherto unsuccessful, has at last produced satisfactory results. ZENKOWSKI, of Charkow, has vaccinated over 1300 sheep, with a resultant immunity which is apparently complete. In the presence of a number of Government and University officials, thirty of these vaccinated sheep were inoculated with a strong anthrax culture. The temperature rose nearly two degrees, to regain the normal on the fourth day, with entire recovery. In the control experiments, out of ten similarly treated unvaccinated sheep, eight died in from twenty to forty hours, and the ninth in six days.—*Centralb. f. d. med. Wiss.*, Jan. 2, 1886.

TUBERCLE BACILLI IN THE PUS OF OTORRHŒA.—NATHAN has examined the pus of forty cases of otorrhœa placed at his disposal by Prof. Bezold. In twelve of these he found bacilli of tuberculosis. Amongst forty-six preparations these were demonstrable in forty. Other traces of pulmonary tuberculosis corroborated these results in eight of the twelve cases. Physical examination revealed no pulmonary affection in the ninth case, that of a scrofulous child. The remaining three were subjects of caries; one suffered from a sequestrum in the mastoid, and caries of the ossicles existed in the other two cases. The other twenty cases, in which an examination revealed no bacilli, embraced various diseases; in three there was disease of the adjacent

cells, and perforation of Shrapnell's membrane. The presence of bacilli in the aural discharge of those patients also presenting pronounced pulmonary complications, places beyond doubt the phthisical nature of the middle ear trouble. It further exerts a determining influence upon the prognosis of these cases.—*Archives of Otology*, 1885, No. 3.

ALBUMINURIA CONSEQUENT UPON LESIONS OF THE SKIN.—AUGAGNEUR records several cases confirmatory of the well-known assumption that renal inflammation may be induced by suppurative lesions of the skin. The condition of the kidney is determined by the absorption of bacteria from the cutaneous lesion, or, as suggested by Fürbinger, by an absorption of the products of the retrograde metamorphosis of albumen induced by bacteria. Augagneur concludes, from his observations, that such renal inflammation usually subsides with the healing of the cutaneous lesions, and that its prophylaxis is best effected by antiseptic treatment of the skin trouble.—*Centralbl. f. klin. Med.*, Jan. 16, 1886.

THE PHARMACEUTICAL AND THERAPEUTIC USES OF ALGIN.—MR. WATSON SMITH calls the attention of pharmacists and physicians to a new product, *algin*, discovered by Stanford. It is a residual product of the wet way of obtaining iodine from certain marine algæ, being a nitrogenous principle, closely resembling albumen except in not being coagulated by heat. It forms perfectly definite *alginates* with metals. The alkaline and earthy-alkaline alginates are soluble, but the others are insoluble. The double alginates are easy of preparation, and almost all of them are soluble. Besides possessing many curious chemical properties, giving promise of extensive applicability in pharmaceutical and other processes, algin has a notable alimentary value, and may be advantageously substituted for gum-arabic in the preparation of a great number of dietetic and medicinal products.—*Physician and Surgeon*, January, 1886.

NEW PURGATIVES.—At a recent meeting of the Academie de Médecine, DR. DESNOS presented observations on baptisin, sanguinarin, juglandin, and phytolaccin. The last named he regarded as of especial interest, as it was found to be a reliable purgative in doses of from one and a half to three grains. It also possesses cholagogue properties. Sanguinarin was found to be unreliable, and its rejection was advised.—*Les Nouveaux Remèdes*, Jan. 1, 1886.

IRRIGATIONS OF ETHER IN THE VOMITING OF PREGNANCY.—In the *St. Louis Courier* we read of a young woman, primipara, of feeble constitution, who had vomited from the second month of pregnancy. At the end of the fifth month the vomiting became so violent as to threaten death, there being syncope, absolute prostration of power, noises in the ears, chills, cold, and profuse sweats, frequent and filiform pulse, etc. In their turn antispasmodics had been used (ether, valerian, musk), then opiates, carbonated and iced drinks, iodine externally and internally, blisters upon the epigastrium, hypodermatic injections of morphia—in fact, every known means of arresting vomiting—all without avail. It was suggested to try irrigations of ether upon the epigastrium. The effect was instantaneous; a single irrigation sufficed to cut short the vomiting. The patient drew a few long breaths, and said she was cured and felt perfectly well. The vomiting returned twice, subsequently, and each time ether irrigations arrested the trouble.—*Kansas City Medical Index*, Jan. 1886.

RAYNAUD'S DISEASE.—*The Journal of Nervous and Mental Disease* for Jan. 1886, gives the following *résumé* of four cases of Raynaud's disease. Dr. Colcott Fox has reported two cases of this disease to the Clinical Society of London. A woman, æt. forty-one, of extremely nervous temperament, dated her disorder ten years back, but she had probably had slight attacks some years previously. In the earlier stages all her fingers continually went "like white wax." This condition of recurrent local syncope gradually gave place to local asphyxia, and the feet became involved. The fingers gradually lapsed into a state of chronic asphyxia, which was intensified by frequent attacks of more severity, often leading to "blood-blisters" and ulceration. The nutrition of the phalanges suffered greatly, her hands being crippled, the fingers fusiform in shape, livid, shiny, and withered, the nails variously distorted, and the end phalanges much atrophied and almost immovable. The nose and ears become affected to some extent on exposure. Cold and nerve shocks are exciting influences. The second case, that of a male, æt. fifty-one, like one of Raynaud's cases, had diabetes. His hands were deformed, and he had suffered for several years with "dead fingers." He sought Dr. Fox's advice for symmetrical gangrenous patches on the skin, which recurred, and later for an attack of asphyxia of one great toe and lower third of the inner side of the leg, and then it was found that the other toe had been affected even more severely. On another occasion blood-blisters had formed beneath the ends of his toes.

Dr. Frank R. Fry, of St. Louis, also reports two cases. 1. A female, æt. thirty-two, had been under observation far two and a half years, having suffered from extreme general anæmia—or spanæmia—also uræmia, metrorrhagia, and great debility. Her heart was weak and irritable. She gave a syphilitic history. The symptom indicative of Raynaud's disease was the apparently bloodless condition of her hands. From the tips of the fingers to the wrists they had a bluish-white color, and the feel could only be described as cadaveric. She complained of an almost constant aching in them. The feet were in a somewhat similar condition, ischæmia not being so extensive as in the hands. This attack lasted for a week; later she improved, the attacks becoming less severe and less frequent. 2. Male, æt. seventeen; when first seen all the fingers of both hands back to the metacarpo-phalangeal joint were in an asphyxiated condition, apparently bloodless, cold, and stiff. He moved and used his hands in a clumsy manner as if they were stiff from cold. Sensibility was much obtunded, though pain accompanied and followed this condition. His attacks had commenced about one year previous. They occur from one to three times a day, and last from fifteen minutes to an hour. Nothing abnormal was found, except a slight irregularity and feebleness of the heart.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication. When necessary to elucidate the text, illustrations will be furnished without cost to the author. Editor's Address, No. 1004 Walnut St., Philadelphia.

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SATURDAY, FEBRUARY 13, 1886.

EXPERIMENTAL ENDOCARDITIS.

IN THE MEDICAL NEWS of Ocotber 24th, we referred to the observations of Orth, who was able to induce acute endocarditis by lacerating the valves and subsequently injecting microörganisms into the blood. An ulcerative process was in this way set up in the torn segments which could not be produced by the laceration alone or by simply injecting a fluid containing microörganisms.

RIBBERT, of Bonn, has published in *Fortschritte der Medicin*, No. 1, 1886, an interesting account of a series of experiments on myo- and endocarditis, both of which conditions he has been able to induce by injecting the staphylococcus into the blood of rabbits without any previous laceration of the valves. Cultures on potato were used for injection, and it was found that if the material was too finely divided or if too small an amount was injected, the effect was not so likely to be produced as when coarser particles were employed. The quantity introduced had an important influence. Less than a sixth part of a Pravaz syringe never produced endocarditis, though the animal would die in from two to three days. Half a syringeful of the coarser emulsion was invariably followed by adhesion and growth of the micrococci on the mitral and tricuspid segments, most frequently on the former. The aortic and pulmonary valves were never affected. The colonies formed either a continuous layer or were in scattered groups one or two millimetres in diameter. The free borders of the valves and contiguous parts of the tendinous cords were the regions most often affected. The histological examination of the valves showed very clearly the various stages in the process of destruction of the tissue and confirmed the views of Klebs and others that the micrococci first settle on the endothelium and penetrate in this way, and not from within, by embolism, as Köster supposes. The earliest change seems to be superficial necrosis, caused by the direct action of the microörganisms, to which succeeds rapidly an inflammatory reaction indicated by the presence of numerous leucocytes. The micrococci penetrate into the tissue and cause widespread necrotic destruction. Fibrin separates upon the masses, and we have in this way produced the characteristic fungoid vegetations of ulcerative endocarditis.

Cultures proved that the microörganism was the golden staphylococcus which has been shown by several observers to be concerned in certain cases of ulcerative endocarditis in man. To complete the evidence, we now require carefully prepared cultures from a case in man and a similar series of experiments to those undertaken by Ribbert. Doubtless such will be forthcoming at an early date, and will conclude, so far as possible, the experimental evidence of the mycotic character of malignant endocarditis. A further series of observations will be necessary to determine whether there are not, as has been suggested, various microörganisms capable of inducing endocarditis.

COLECTOMY FOR CARCINOMA.

IN the current number of THE MEDICAL NEWS, DR. WEIR records a case of successful resection of the sigmoid flexure of the colon, the patient being alive ten weeks and a half after the performance of the operation, with a probability of recurrence of the malignant disease. As the safe approximation of the divided ends of the bowel would have been a matter of great difficulty, an artificial anus was established by suturing the upper end of the gut to the superior angle of the abdominal wound.

In connection with his case, Dr. Weir tabulates thirty-five examples of excision of a portion of the intestine for carcinoma, in four of which the small intestine was involved, and in one of which the result of the operation is unknown. Excluding those cases, and adding two additional instances of which we have notes—the transverse colon being affected in one, and the sigmoid flexure in the other—three are on record at least thirty-two examples of colectomy for carcinoma. With this experience before us, the questions which naturally arise are, first, whether the operation should be undertaken at all, and, secondly, whether it is better, after the resection of the gut, to suture and return the ends, or establish an artificial anus.

That the operation is a most serious one is shown by the direct mortality of fifty per cent., sixteen of the thirty-two patients having died, and an equal number having recovered. Of the sixteen cases of

recovery, six are reported a few weeks after the performance of the operation, thereby leaving ten cases in which the final result is known. In seven of these the patients died of recurrence in from six to twenty-four months, or in eight months on an average; two were living with recurrence; and one remained well for four years. Hence, fifty per cent. of the patients die from the operation; the disease recurs in ninety per cent.; and a cure is effected in less than four per cent. In view of these results, the operation has certainly proved to be a most unpromising one.

Should, however, an operation be decided upon, the disposal of the divided ends of the bowel is a matter of serious consideration. Of twenty-four cases in which the gut was sutured and returned, eleven, or 46.8 per cent., perished; while in eight in which an artificial anus was formed, five, or 62.5 per cent. died. The evidence seems, therefore, to be in favor of colectomy and enterorrhaphy, but, as Weir points out, in one-half of the cases of the establishment of an artificial anus, that procedure was resorted to because so much of the bowel had been removed as to render it impossible to approximate the divided ends, through which the operation was rendered more hazardous. Suturing and dropping the gut is undoubtedly the more tedious procedure, and requires greater attention to details, and, in addition, escape of the intestinal contents into the peritoneal cavity is very liable to occur unless the stitches are inserted with the greatest care. For these reasons, we agree with Weir that it is wiser to establish an artificial anus.

DREAMS.

WHEN Shakespeare put into the mouth of Prospero, "We are such stuff as dreams are made of," he suggested no explanation of dreaming. He was simply teaching the vanity of earthly things; they were as unsubstantial, as perishing, as evanescent as are the visions that come to mortals in the night, when tired nature is receiving rest and restoration in sleep.

Few there are who do not have the companionship of dreams, or at least their occasional visits, from childhood to extreme old age; even the infant sometimes dreams, at least we have as certain proof of this fact independently of what the poets have told us, as we have of the dreaming of animals, which has been so strongly presented by the late DR. LINDSAY in his interesting work upon *Mind in the Lower Animals*. Prominent among the animals which dream he placed the dog, a truth that has been generally received from the time of Lucretius and of Seneca to that of Tennyson, whose line, "Like a dog he hunts in dreams," is familiar to all, though really the thought seems borrowed from the words of Ennius, *Et canis in somnis leporis vestigia latrat.* The starving have dreamt of costly and abundant viands, the poor have for a brief time revelled in exhaustless wealth, the neglected maiden may be the heroine of a more marvellous history than that of Cinderella, and the humble and lowly have become the possessors of thrones and kingdoms. Strange and magnificent processions may come to the closed eyes, and scenes apparently unconnected and often incongruous, but beautiful, may move before them like a swift panorama; the laws of time and space are set aside—Huber, the great naturalist, at sixty-six years of age, blind since he was eighteen, dreamt of seeing the sunshine, and once again with his own eyes, and not with those of another, beheld the beauty of nature as he did in boyhood. Once more those in distant lands return, and talk with us face to face; yea, even the dead come back, we again hear loved voices that have been silent in the grave for years, and behold loved forms that have long since yielded to nature's inevitable law, "dust to dust, ashes to ashes."

Dreams of terror and pain also come, of a peril which yawns for us on sea or land, of a wave that is just about to overwhelm us, or of falling from some dizzy height to a fathomless abyss; of being involuntarily driven to the commission of crime, or impetuously fleeing from it, not knowing where we shall go; or again, of a deadly danger when the tongue is speechless to call for help, and the hand cannot be raised for defence, and the feet refuse to carry us away; we suddenly waken in our agony and rejoice to find we were only dreaming, but will not trust ourselves to sleep again lest the terrors should return.

The subject of dreams is thus an interesting one to all. In its consideration we enter into the borderland lying between science and mystery, if not between matter and spirit, a land, however, into which science slowly but surely enters, shedding new light, though possibly she may never be able to solve all mysteries.

Nor is the subject of dreams without special interest to the physician, for they may be caused by disorder of important functions, or be the forerunners of grave disease; the hallucinations of dreams, usually dissipated upon waking, may become fixed in the mind, and lead to grave crime or confirmed insanity. Moreover, the physician who would know man not merely physically but psychically, must study not alone the psychology of waking, but also that of sleeping hours.

Laying aside those instances recorded in sacred history where dreams were Divine revelations of duty or prophecies of future events, because not belonging to general human experience, remote from our day, and not on the plane of human investigation, some dreams at least were regarded by the wisest of ancient philosophers as supernatural in origin. Socrates, for

example, if we can trust the word of Plato, had this faith, and his action was in certain cases determined by the revelations made in dreams, as one may readily see by referring to the *Phædo* and the *Crito*. Yet Plato has very clearly shown, in a passage in the *Republic*, that evil dreams may result from a disordered condition of the body; they come, he says, "when the wild beast in our nature, gorged with meat or drink, starts up and leaps about, and seeks to go and satisfy his desires." And, again, he says, "There is a latent wild beast nature, which peers out in sleep." Burton, in the *Anatomy of Melancholy*, while referring to "imaginary dreams, which are of various kinds, natural, divine, demoniacal, etc.," also states that they vary "according to humors, diet, action, objects, etc." Thus, while the supernatural element was recognized in some dreams by both Socrates and Burton, the latter, as well as Plato, asserted that other dreams were dependent upon physical conditions of the dreamer.

One striking fact in regard to dreams is their complete independence of the will. That this independence should exist in the evolution of dreams is, of course, not at all surprising, but that it should also exist as to their genesis does seem somewhat inconsistent when we compare the condition with the control that each one possesses in a greater or less degree over his sleep. We can will to waken at a particular hour, and generally succeed; thus one who retires at night having it strongly impressed that he must rise at a special time, in order to start on a journey, for example, generally wakens at that time—intense preoccupation prevents, probably, his sleeping as soundly as usual, and the will maintains a partial power. The mother wakens at the least cry from her sick child, or the nurse at a slight movement by her patient, and in each probably the wakening is in part volitional. But it is impossible for us to choose the subjects of our dreams. We may wish most strongly that some theme which has engaged our waking thoughts may be presented in sleep for involuntary mental action, or we may wish to see in these visions of the night a distant or dead friend, but our wills are powerless to gratify our desires. The late Sir William Hamilton justly remarked that it is not always the subjects that occupy us most when awake, that form the matter of our dreams; and it is curious that the persons dearest to us are precisely those about whom we dream most rarely.

While in some cases we can trace dreams to certain physical conditions, yet in most the connection is through too wide a series of associations, or otherwise so obscure that we cannot apprehend it.

In illustration of the former statement, we may refer to the incident narrated by the great metaphysician Reid, as occurring in his own case. He states, "I had got my head blistered from a fall. A plaster, which was put on it after the blister, pained me excessively for a whole night. In the morning I slept a little, and dreamed, very distinctly, that I had fallen into the hands of a party of Indians, and was scalped." In Dr. Reid's case the profound sensation aroused by the pain upon the external part of the head would very naturally suggest the character of the dream, while the dreaming probably was caused by the increased quantity of blood in the brain resulting from the fall. In the case of a woman the membranes of whose brain were exposed by very extensive destruction of the cranial bones, it was observed that during active dreaming the brain became elevated so as to make a slight projection through the opening; the case was under the care of Langlet, and is referred to by Tourdes in the *Dictionnaire Encyclopédique des Sciences Médicales*.

It is probable that dreams are prevented by profound sleep and they do not, as a rule, come in the first hours of rest, but rather when nature's forces have been partially restored, and the sleep is lighter. It certainly ought to startle us into wise thought and action, and right desires and affections, if it be true that the record of our rational lives is registered upon the pages of the brain, and that "every act of sentiment, of thought, of volition, has impressed in us a trace which may reappear." Sometimes, indeed, memory possesses unwonted power in sleep, and we may then recall facts which we vainly sought when awake. So, too, but also only exceptionally, dreams may bring solutions for problems which baffled hard, wakeful labor, and an eloquent passage or graphic description may come to the orator's mind while he is sleeping, or musical verses, as those of "Kubla Khan" to Coleridge, may be suggested to the poet in his dreaming. Such unconscious exercise of intellectual power is very rare, and possibly can only occur in a person of remarkable delicacy and perfection of brain structure, such a one as De Quincey described Charles Lamb to be; "the sensibility of his organization was so exquisite that effects which travel by separate stages with most other men, in his, flash along the nerves with the velocity of light."

We have been led into these observations by reading the very interesting chapter upon "Sleep and Dreaming," in Wundt's *Elémens de Physiologie Psychologique*. The author gives the fullest scientific account of dreams with which we have met, and we desire to present some of his explanations and conclusions to our readers, but having already occupied so much space we must defer this presentation to a future issue.

A NEW LOCAL ANÆSTHETIC.

AT a recent meeting of the Medical Society of Berlin, DR. LEWIN presented a most interesting series of observations upon the physiological effects of a

resinous extract obtained from the root of *piper methysticum*, which is soluble in alcohol, possesses a somewhat aromatic taste, and leaves upon the tongue a sensation of pricking and burning, soon lost in the supervening local insensibility. When the extract, even in very small amount, is instilled into the eye of an animal, a slight local irritation is evidenced by repeated blinking, which soon yields to a marked, enduring, and complete insensibility of the conjunctiva and cornea. In guinea-pigs Lewin has seen this insensibility continue for more than an hour, normal sensation gradually returning. The iris retains throughout its reflex responsiveness to optic stimuli. No anatomical lesions of the cornea or conjunctiva were observed as the result of its application.

When the solution of the extract is injected hypodermatically, the tissues with which it comes in contact completely cease to respond to the application of thermic, electric, and chemical stimuli—a transitory condition which is followed by no symptoms of inflammation.

In regard to the constitutional effects produced by the drug, upon man, much the same claims are put forward as in the case of coca. When used in moderate amounts, a feeling of comfort, contentment, and rest, with complete retention of consciousness and reason, is said to result. With large doses there is a sensation of dreamy happiness, with an intense desire for sleep; while in excess the infusion causes nausea, headache, paresis of the extremities, nervous trembling, and somnolence. The general effect upon birds, rabbits, and cats is analogous to that produced in man.

It is evident that the drug is of considerable importance, and, if further experience shows that it effects in man the prolonged local anæsthesia that it induces in animals, it will be of great utility in very many operations in minor surgery. A quantity of the extract has just been received, and in an early issue of THE MEDICAL NEWS we will lay before our readers a report upon its properties.

PAINLESS SLAUGHTERING OF ANIMALS.

SOME thousands of dollars, we believe, have been spent by the Antivivisection Society of this city for the purpose of suppressing scientific cruelties which do not exist, and we sincerely trust that the humanitarians who, in this impracticable way, have found vent for their superfluous money and energy, may be induced to turn their forces into a more worthy channel.

We would call the attention of our readers to the accounts appearing in another column concerning the unnecessary brutality which accompanies the slaughtering of animals in Philadelphia.

The committee appointed by the President of the College of Physicians is charged with the duty of endeavoring to secure the introduction of more humane methods into slaughter houses, and is composed of well-known vivisectionists. If they succeed in bringing about the proper reform, they will have done more for the relief of animal suffering than the host of antivivisectionists who have been clamoring for these many years.

There is one aspect of the matter which is of direct practical importance to the meat-eaters of Philadelphia, namely, the apparent total lack of any supervision as to the quality of the meat which is served upon the private tables, and perhaps more freely in boarding-houses. It is doubtful as to how far it is really injurious to eat diseased meat which is thoroughly cooked. We remember once hearing Prof. Leidy, in a lecture, state that on a certain day after dining feeely upon an unfortunate chicken, he called the cook and asked her why she had not sent in the liver, which tidbit he had in vain diligently searched for. The heroine of the kitchen replied, "the liver looked so queer I did not like to cook it." The Doctor then sent for it, and, taking it into his study, soon found that it was in the last stage of cancerous degeneration. Although the danger of physical ills may not be great from such ingesta when well cooked, sentiment is opposed to dining upon the products of disease. It must also be remembered that the poorest quality of beef is usually made into sausages, and that many of these so-called bolognas are eaten raw, or only partially cooked. If there be any truth whatever in the doctrines of Koch and his followers, feeding upon half-cooked bacilli cannot be conducive to the most robust health.

SOCIETY PROCEEDINGS.

THE PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, December 28, 1885.

THE PRESIDENT, S. WEIR MITCHELL, M.D., IN THE CHAIR.

DR. GUY HINSDALE presented a communication on

THE METHODS OF SLAUGHTERING ANIMALS AT THE PHILADELPHIA ABATTOIR.

There has recently been put in my hands a series of written questions which relate to the methods of slaughtering animals in our Philadelphia Abattoir. The subject has been brought before the Society for the Prevention of Cruelty to Animals, and the officers of the Society desire to obtain from some of our Philadelphia physicians an expression of opinion as to the proper method of killing cattle with the minimum of pain.

As the members of this Society are doubtless aware, enormous numbers of cattle, sheep, and pigs are slaughtered at the abattoir in West Philadelphia. Into the main hall of the building, which is spacious, having a high roof, with good light and ventilation, the cattle are led in large numbers. They are apportioned to

about fifteen different pens or iron cages arranged in a straight line, each capable of receiving seven or eight bullocks. The iron bars of which the cages are made are separated about fifteen inches from each other, affording a comparatively unobstructed view of the remainder of the room. The gate of exit from a pen is opposite the gate of entrance; above it is the windlass for hoisting. The animal is, in most instances, struck down while standing among his fellows, by a butcher who stands on a plank above him armed with a heavy, long-handled sledge-hammer. He is then hoisted by the windlass through the open door, is disembowelled and dressed for the market within six feet of the animals remaining in the cage, When the carcass is ready for market one of the butchers climbs above the cage, and with the hammer strikes down two more animals; they are dragged out, and so on until all the animals are disposed of.

The Jewish butchers for ages have killed by bleeding. They never use a hammer, but after hoisting the animal by a hind leg, the throat is always cut by a rabbi or "shockem," armed with a keen sabre. This rabbi is detailed for duty at the abattoir.

Underneath the main hall is a cellar in which sheep and pigs are slaughtered by the knife. It is a dark, unclean, repulsive place. Large quantities of accumulated gore are seen in the places where the animals are usually killed. The surface drainage is very bad; the upper floor, though deluged with blood, is attractive in comparison.

The questions to which answers are desired by the Society for the Prevention of Cruelty to Animals are these:

1. Does the Israelitish method produce a total loss of sensation?

2. Does a total loss of sensation arise from a blow struck upon the head of the animal with sufficient force to knock him down?

3. What is the most humane way of slaughtering cattle, which would produce instantaneous death?

4. Do you think a bullock is so sensitive as to suffer terror or agony in witnessing the deathblows and sufferings of his companions?

With a view to satisfy myself on these points, I made three visits to the Abattoir. I had no especial interest in the subject before, and supposed that the methods were not open to criticism.

As for the first question, I think it safe to say that the Israelitish method is instantaneous when once the steel strikes the neck. The blood gushes out, the brain is instantly deprived of blood, and consciousness is lost without appreciable loss of time. The young rabbi deserves credit for the skill with which he performs this operation. To suspend animals with heels up and head down is, at first sight, somewhat harsh, but, on the other hand, they are accustomed to a low position of the head, and the new position is only ninety degrees removed from the normal.

Regarding the second question, it appeared to me that consciousness did not always cease when a blow was struck upon the head of an animal with sufficient force to knock him down.

The first two animals that I saw killed were struck on the head, in the middle line a little anterior to the line of the insertion of the horns. They instantly dropped; a few convulsive movements, sometimes unilateral, sometimes general, occurred, and they were removed from the cage. The next three animals were struck by a different man. Two animals were struck eight times apiece, and the others nine times before the butchers saw fit to proceed to dress the beef. Although the earlier blows were ineffectual, the later ones were delivered when the animals had lost sensation, and when the convulsive movements appeared too violent. In other instances one, two, three, or four blows were required. Animals were partially struck down, and did raise their heads, and look about, unquestionably conscious of pain. The ox is not by any means the only animal that may preserve consciousness after being struck down by a blow upon the head. We ourselves may know this from personal experience. However, one blow well applied was sufficient perhaps, in the majority of instances, instantly to destroy sensation.

Two other cattle which I saw killed at my third visit were attacked by a third man. The first received three blows upon the head, but still the animal walked about, and it became so difficult to induce him to stay still in proper position (the unreasonable creature!) that the butcher resolved to devote his attention to another animal, upon which, also, he delivered three heavy but ineffectual blows. I noticed by this time that the first animal was bleeding from the nose, and that both were able to walk about. This heavy hammer would sometimes bound from the skull as you might expect a wooden mallet to do. The animals gave no cry, and made no violent demonstration, as one might expect; they received these murderous blows as a prize-fighter might receive his, without evincing pain. They, however, became uneasy, endeavored to avoid the man crouching above them, and, without much trouble, were finally dispatched.

As to whether a bullock is so sensitive as to suffer terror or agony, in witnessing the deathblows and sufferings of his companions, interesting metaphysical questions are involved. Butchers in the abattoir do not seem to think that the animals are conscious of their surroundings. They say they occasionally milk a cow in a cage near which animals are being slaughtered. It is quite evident that, as a rule, bullocks make no attempts, or the most ineffectual attempts, to avoid the fate of their companions. In one instance which came under my observation, the last of a series of bullocks became frightened; he dodged the blows, put his head through the bars, and held it low, out of the reach of the butcher standing on the top of the cage. Men with sticks poked him about, while inaccurate blows fell upon his head, until, after a disgusting struggle, he was dispatched. This animal seemed to me to act at the start as though he appreciated danger from witnessing the death of his companions. Butchers say that Texan steers give more trouble than others, and are more liable to grow wild at the sight and smell of blood. It cannot be that their mental powers are radically different from those of other varieties of oxen.

It is not necessary to repeat before this Society anecdotes or proofs to show that a steer may become frantic at the sight and smell of blood. Carnivorous animals are not so susceptible. A dog may even eat another dog, as one of our proverbs says, and yet some dogs

are capable of sympathy, and exemplify it by appropriate behavior. Not only the elephant, but even so small a creature as the ant, manifests sympathy.[1] The sense and the understanding are not the prerogatives of man exclusively. These lower animals have attention, memory, association. They exhibit generosity, gratitude, courage, caution, patience, industry, anger, and grief.

Doubtless the ox or the sheep or the pig cannot claim the possession of all these qualities. But their mental system is much less perfectly understood than ours. "The popular tendency has been to underrate the acquired knowledge of animals, if not to ignore it altogether. At present we are not in a condition to dogmatize, owing to the want of proper observations on the whole department of brute intelligence."[2] As Lauder Lindsay puts it, "the very terms animality and humanity are, on the one hand, unnecessary distinctions; while, on the other, they are generally wrongly applied, for there is more animality in man and humanity in animals than our self-conceit will permit us willingly to recognize. We cannot correctly speak of the animal in contradistinction to the human mind, inasmuch as mind is essentially the same in other animals as in man, differing simply in the degree of its development and the mode of its expression."[3]

But what can be done to remove the objectionable features of this necessary work of slaughter?

1. The work of killing these animals should be given only to a man of experience and power.

2. It is not necessary, and it should not be permitted, that animals should witness the death of their fellows. They may wait their turn together, but finally should be led to an apartment alone, where a single successful death-blow may be given.

3. Means should be provided for making this blow unerring. A crushing blow on the brain-case is, undoubtedly, a painless death, and, by a mechanical contrivance, this might be made unfailing. Fixation of the head would be necessary, and perhaps could be accomplished by means of the horns. An experienced executioner, with an adequate instrument, either in his own hands or under his control, as a trip hammer is under the control of a forger, could then dispatch these poor brutes with the minimum of pain.

4. The number of men who perform this work should be small; and boys, women, and the public generally, should not be permitted to witness these brutalizing scenes.

5. The Jewish method, when rapidly performed, is, on the whole, not a cruel method.

6. The city should take immediate steps to supervise this abattoir; it should have an official inspector of meat, and adopt some effectual, scientific method for the detection and condemnation of diseased meat.

If this Society will endorse these statements, I believe that a better state of things can be secured. If proper evidence can be adduced, the Society for the Prevention of Cruelty to Animals will take hold of the matter and insist on reform in this important public institution.

DR. CHARLES K. MILLS moved that a committee be appointed to visit the abattoir, and report to the Society on the questions proposed by the Society for the Prevention of Cruelty to Animals.

The committee appointed consisted of Drs. H. C. Wood, H. A. Hare, F. X. Dercum, A. P. Brubaker, and Guy Hinsdale.

[1] Romanes, Animal Intelligence, p. 47.
[2] Art. Instinct, Chambers's Encyclop.
[3] Journal of Mental Science, April, 1871.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, February 3, 1886.

THE PRESIDENT, S. WEIR MITCHELL, M.D., IN THE CHAIR.

DR. HORATIO C. WOOD, on behalf of a Committee of the Philadelphia Neurological Society, made the following statement concerning the

PAINLESS SLAUGHTERING OF ANIMALS.

Some weeks ago, the attention of the Neurological Society of Philadelphia was called to the subject of the Philadelphia Abattoir, and the mode there employed of slaughtering cattle and sheep, by a paper by Dr. Guy Hinsdale. The subject was referred to a Committee, of which I had the honor to be the Chairman, for investigation, and, upon the making of our report, the Society directed me, as Chairman of the Committee, to bring the matter before the College of Physicians of Philadelphia, as the highest representative body of the profession in this city.

As is well known, there are yearly killed in the abattoir in West Philadelphia, owned by the Pennsylvania Railroad, many thousands of cattle, sheep, and hogs. The method of slaughtering the sheep and hogs is simply to cut their throats, and to allow them to bleed to death. If this be done skilfully with a single sweep of the knife, the death is rapid, but far from instantaneous, and consciousness is preserved until the blood is nearly exhausted from the body, the supply of the vital fluid through the vertebral arteries being sufficient to maintain temporarily a certain amount of brain function. In the case of sheep, pithing is a very simple operation, and any butcher, after a little practice, could do it with rapidity and ease. The amount of expended time which it would add to the present method is exceedingly small, and we can see no reason, except the callousness of custom, for objecting to its introduction. In the small slaughter houses of the olden time, a rope was thrown around the horns of the cattle, and the animal was violently dragged down to a ring in the floor, and then dispatched with a blow in the forehead. I understand that in the Paris abattoirs this method is modified so far that the bullock is driven into a narrow gangway or pen, a rope thrown round the horns and rapidly hoisted so as to raise the forefeet of the creature from the floor, when the fatal blow is given. In some of the great abattoirs of the West the animal is shot, and, of course, if the bullet be accurately directed, the victim dies instantaneously. In other places pithing is practised, and, if skilfully performed, produces immediate death.

The objection to shooting is the danger of the bullet either simply wounding the animal or occasionally, when discharged through carelessness or accident, passing wide of its mark. It is said that serious accidents have thus occurred in the Chicago abattoirs. Pithing is un-

doubtedly the best method of killing, provided the requisite skill is present, but its proper performance requires a much greater degree of skill than would probably be commanded in our city abattoirs. If the blow upon the forehead be given with a sufficiently heavy instrument, which is provided with a truncated point one and a half inches in diameter, and be well directed, it undoubtedly produces an effect which is as immediate and almost as thorough as that of pithing. I believe that under these circumstances the medulla itself will be found to be crushed or destroyed by the enormous hemorrhage. The idea of the plan which is adopted at the Philadelphia Abattoir appears to be as good as any that is practical, but the method of the carrying out of this plan is exceedingly bad. The main hall of the abattoir is spacious, well lighted and ventilated, and the centre is occupied with fifteen pens or iron cages, placed in a straight line on each side of an avenue. Each of these cages is capable of holding from seven to eight bullocks, and the view of the whole floor is practically unobstructed by the slight iron bars which separate the cages. Over the top of these cages are placed planks. The plan is for the bullocks to be driven into the pens, often until the latter are completely filled. The person who does the killing stands upon the planks above the pen, watches his opportunity, and strikes down one after another of the cattle beneath him. The hindlegs of the theoretically unconscious victims are then attached to a chain, and by means of a windlass the body is dragged out of the pen and suspended with its head downward. After this the throat is cut and the blood caught in buckets or tubs.

The first question which naturally arises is as to the amount of psychical suffering that is produced in the cattle by the sight of death or the smell of blood. After a good deal of observation the Committee of the Neurological Society came to the unanimous conclusion that the cattle had an imperfect consciousness of what was going on; most of them seemed entirely cowed and passive, whilst others were exceedingly restless and apparently very anxious. The Committee did not believe that the suffering would compare with that which would exist in human beings under similar circumstances, but it seemed to be quite definite and distinct.

As no provision is made for the animals being in the proper position for striking, the butcher who uses the hammer, selects his opportunity as best he may. Moreover, the weapon is used by a number of individuals, the result being that in a very large proportion, and, perhaps, in the majority of cases, a single blow is not sufficient. When first struck the animal falls to his knees, or, as in many cases, scarcely flinches, only striving with more or less eagerness to get away from a danger the existence of which he recognizes, but the direction of which he does not perceive; the beast is then driven about as best may be until an opportunity is afforded for a second blow; thus the process of torture is repeated until finally the animal falls. It is also the custom at the Abattoir to strike down three or four bullocks at once; so that some minutes must elapse before the cutting of the throats of some of them. Under these circumstances the unfortunate creature very frequently recovers partial consciousness before his turn comes, and not rarely regains sufficient self-possession to get upon his feet, when the process of striking-down has to be repeated.

Observation made by various members of the Committee, at different private slaughter houses in Philadelphia, shows that there is still greater carelessness and recklessness of animal suffering than in the public abattoir.

It is not necessary to enlarge at all upon the condition of affairs at the Philadelphia Abattoir. Fortunately the remedy is a very easy one, and it can hardly be that the officials of such a great corporation as the Pennsylvania Railroad will fail to apply a remedy when the evil has been brought to their attention. The arrangement of the pens should be remodelled, so that the bullock to be killed shall be isolated in a close, narrow pen, but especially should the striking be performed by one man, whose sole duty it should be to deliver the fatal blows. With the skill that would come with constant repetition, it is probable that it would not be necessary to raise up the head of the bullock at all, but if this be deemed advisable, over the horns of the animal, driven into the narrow pen, a rope could be readily thrown, and in an instant the feet raised from the ground.

Before taking leave of this matter, it seems right to call the attention of the College of Physicians to the very great need there is of some inspection of meat at the Philadelphia Abattoir. Of the dozen or fifteen cattle which I personally saw killed, the internal organs of one were simply studded with tubercular nodules, so that the beast must have been in the last stages of general tuberculosis. The meat was dressed and prepared as that of the others for sale. It is probable that this diseased meat especially finds its way into those forms of sausages which are largely eaten by a portion of our population in a partially cooked condition. It seems to be but right that protection should be afforded to the community against the use of diseased meat, and that, therefore, there should be an inspector having supervision over both the public and private slaughtering places of the city.

In conclusion, I trust that the subject of this communication will be referred to a committee with power to bring the matter, through the public press, to the attention of the citizens of Philadelphia.

Upon motion, the Chair was authorized to appoint such a committee, to consist of three Fellows, with power.

The President appointed Drs. H. C. Wood, H. C. Chapman, and E. T. Reichert as the committee.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, January 26, 1886.

THE PRESIDENT, CHARLES MCBURNEY, M.D., IN THE CHAIR.

DR. R. F. WEIR read a paper entitled

RESECTION OF LARGE INTESTINE FOR MALIGNANT GROWTH.

(See page 173.)

DR. BRIDDON remarked that notwithstanding Allingham's opinion that colotomy does not prolong life, he had seen life prolonged and made much more comfortable by colotomy in cancer of the rectum, where

the disease could not be entirely removed. He referred to a case of cylindrical epithelioma of the rectum in which, in the Presbyterian Hospital, he performed lumbocolotomy, and the result was that the general condition of the patient was very much improved, and she was rendered very much more comfortable with reference to the local condition.

DR. H. B. SANDS agreed with Dr. Briddon in his protest against the view ascribed to Allingham, that life is not prolonged by colotomy performed for the relief of cancer of the colon or rectum. He did not know how this conclusion, drawn by Allingham, was arrived at, but he thought it was within the experience of most surgeons present that they had often succeeded in prolonging life by this operation. He could recall several instances in which at the time lumbocolotomy was performed the patient was almost at death's door, and in which life was lengthened for a considerable period. He recalled the case of a patient in this city, in whom, at the time of the operation, there was complete obstruction of the bowel, accompanied with enormous distention of the abdomen, and Dr. Sands was sure that if mechanical relief had not been promptly afforded, he would not have survived more than three or four days. The patient had no bad symptoms after the operation, but recovered from it and lived more than a year afterward, being able, during the greater part of the time, to go about and attend to business. He could recall other similar cases. He had presented to the Society a man upon whom he had performed inguinal colotomy, and who, at the time of the operation, was suffering from complete intestinal obstruction. Dr. Sands believed it could be stated as an established fact that, in a certain number of instances, the operation will not only relieve the urgent symptoms, but also prolong life for a considerable period.

DR. BRIDDON said that the most gratifying case in this respect which he had seen occurred about two or three years ago. It was one of acute intestinal obstruction due to malignant growth in the upper end of the rectum. He performed lumbocolotomy, which gave the man complete relief, and he lived for two or three years in a very comfortable condition. The obstruction had existed eight or ten days when he first saw the patient, and the abdomen was largely distended.

DR. L. A. STIMSON said with reference to a collateral point—namely, whether it is advantageous ever to attempt to remove a cancerous tumor of the intestine, that according to the record which Dr. Weir had given, the longest period of survival had been five years. For the encouragement of those who should have opportunity to perform the same operation, he would say that seven and a half years ago he had removed a cancer of the rectum, and the patient, a physician, is still in active practice and good health; there has been no return of the disease.

DR. SANDS said that if it proved to be the result of further experience, that the operation of extirpation of a cancerous intestine can be done in such a manner as to reunite the ends of the intestine, it would still be a matter of doubt whether such an operation, which involves a greater risk than simple enterotomy or colotomy, should be preferred to the latter, for he could imagine that it would be found in cancer of the intestine, as in cancer of the stomach, that surgeons would rarely succeed in making such a radical operation as to give much chance against recurrence of the disease.

DR. F. LANGE said that he had had the opportunity to perform the operation twice; in both cases for malignant growth. In the first case the growth was situated in the ascending colon near the right flexure. It seemed to be very movable, and the patient was in a comparatively good condition. He expected to find conditions favorable for an easy operation, but was very much deceived, for the tumor was intimately adherent to the duodenum. The operation was accompanied by a great deal of hemorrhage, and finally by lesion of the duodenum, which he was obliged to close with suture. He did not, in consequence, have much hope of the success of the operation. The woman died on the second day, of peritonitis.

In the second case he had not intended to perform an operation on the intestine. The case was one of particular interest. The woman, about thirty-two years of age and a widow, applied to him with reference to tumors which had developed comparatively rapidly, and which without much difficulty could be made out as belonging to the ovaries. Dr. Lange regarded the case as one of sarcoma of both ovaries, and did not encourage an operation. The patient had had for the past two years obstinate bloody diarrhœa which could not be controlled effectually by internal remedies, and immediately before the appearance of the diarrhœa she had suffered from an attack of acute dysentery. By her attending physicians the diarrhœa was regarded as being due to the preceding dysentery.

The patient urged that an operation be performed because there were special reasons why she should desire to live a little longer. Dr. Lange, therefore, performed the operation for removal of the tumors, which were taken away without difficulty, but he found to his great surprise that, attached to one of these ovarian growths, indirectly through the omentum, was a large circular tumor of the transverse colon, besides several nodules about the size of a hazelnut in the omentum, and there were also several enlarged mesenteric glands. As the patient was in a fairly good condition, and the operation thus far had not been prolonged, he determined to excise the intestine. The operation lasted about two hours and a half, and went on without much disturbance, and the patient came out from the operation in good condition. The first week was without trouble except that he was unable to check the diarrhœa. On the ninth day the patient died with acute symptoms of perforative peritonitis, which he thought was due to a suture giving way somewhere, in turn due to the incessant peristalsis of the intestine.

Dr. Lange presumed that in cases in which no complication exists the operation is very likely to be beneficial, and is one which will probably prolong life. He did not think that in all cases absolute rules could be stated. In scirrhus of the large intestine, which is movable and without complications, the operation is not more difficult or dangerous than exsection of the intestine for any other cause. The length of time for the operation under such circumstances, which can be performed without very much loss of blood, is not of great importance, if the operation is done with the necessary care and the patient's general condition altogether allows of such an undertaking.

DR. SANDS asked Dr. Lange whether he would not regard cancerous mesenteric glands as a contraindication to the performance of the operation.

DR. LANGE said that if he had known of the condition of the mesenteric glands before the operation he probably should not have undertaken it at all; but having operated and removed the tumors of the ovaries, he thought it was allowable to continue the operation in that case. As a rule, he should say involvement of the mesenteric glands is a contraindication to the operation.

DR. BRIDDON asked Dr. Lange what material he used for sutures in the last case.

DR. LANGE thought he used fine silk in both cases.

DR. BRIDDON asked Dr. Lange whether he would regard catgut as safe in these cases.

DR. LANGE said it would be safe if primary union took place; but, if such union did not occur, silk might give an additional amount of safety.

DR. WEIR replied that Mr. Allingham's opinion relative to the influence of colotomy upon cancer of the lower bowel did not apply to the relief of obstruction, but to its influence when used in the earlier stages of the disease.

KANSAS STATE MEDICAL SOCIETY.

Adjourned Meeting, held at Topeka, January 25 and 26, 1886.

(Specially reported for THE MEDICAL NEWS.)

MONDAY, JANUARY 25.—FIRST DAY.

THE PRESIDENT, H. O. HANNAWALT, M.D., of Kansas City, called the meeting to order.

DR. COCHRANE, of Atchison, reported a draft of a bill from the Committee on

MEDICAL LEGISLATION,

which was received.

DR. STORMONT, of Topeka, opened the discussion by explaining the present law creating a Board of Health for the State, and the powers vested in it, stating that the Board as it is constituted is sufficient for all the purposes of an examining board, and to regulate the practice of medicine and public hygiene in the State, provided the law can be strengthened and made active by an Act which is now before the Legislature.

After free discussion, the proposed bill presented by the Committee was referred back to the Committee, to report again at the May meeting, and the Society expressed its approval of the supplemental Act now before the Legislature to give power to the State Board of Health.

EVENING SESSION.

DR. J. P. KNOCHE, of Kansas City, read a paper on

ECZEMA AND SYPHILIS,

the main points of which were: 1st. No such remedies should be given, as the iodides, bromides, etc., which have more or less action on the skin, in a case of syphilis where eczema exists, or a tendency exists. 2d. Where a surface is more or less constantly irritated, with eczema present, and there be syphilis in the system, the latter disease will in the great majority of cases give some evidence of its presence. 3d. Therefore it can be readily seen that it is necessary to recognize syphilitic eruptions that may be more or less intimately combined with the eczematous eruption. 4th. The local treatment of the eczema will avail little, unless the syphilis is treated in conjunction with it, or the specific infiltration is first removed by appropriate treatment. Two cases supporting this view were reported.

DR. B. E. FRYER, of Kansas City, read a paper on

ENUCLEATION OF IRRITATING EYE, AFTER SYMPATHETIC OPHTHALMIA HAS BEGUN.

It was an exhaustive survey of the literature of the subject. The writer showed that authorities differ as to whether the operation is justifiable after sympathetic ophthalmia has begun, and called attention to the importance of the subject from a medico-legal standpoint. The pathology of the transmission of the inflammation from the irritating to the sound eye was not discussed at length. He favored the theory that it is conveyed along the lymph sheaths of the optic nerve. He then proceeded to quote several cases from his own experience, showing that enucleation is not only justifiable but necessary, even after sympathetic inflammation has begun.

DR. TIFFANY did not believe that there is such a thing as sympathetic neuro-retinitis, but that the inflammation is conveyed from the offending eye to the other by the ciliary nerves, and begins in the most vascular coat, which is the choroid; but he agreed with Dr. Fryer, that enucleation is justifiable after sympathetic ophthalmia has begun. He reported two cases, and presented specimens of ossification of choroid around the optic nerve in old stumps, where abscission of cornea had been done.

DR. MURPHY believed with Schweigger, that the inflammation is carried through the lymph channels which surround the optic nerve, and agreed with the author of the paper.

DR. GEORGE HALLEY, of Kansas City, then read a paper on

HEMORRHOIDS.

In the treatment of the mild form of external piles, he advised that they be laid open with the knife and hot fomentations be applied.

For the milder cases of internal piles, he recommended the exhibition of a laxative, and quiet in bed, and that the tumors be injected with carbolic acid, ten per cent., in olive oil. In cases of long standing, he recommended division of the deep connective tissue and cicatricial bands with the knife in four or five places around the lumen of the rectum, care being taken not to divide the hemorrhoidal arteries. The operator should then divulse the rectum and smear with carbolized castor oil, quiet pain with suppositories of opium and belladonna, and build up the system with tonics.

DR. BALDWIN said that his experience with the use of carbolic acid injections was not satisfactory. They caused *extreme* pain and some alarming symptoms, such as retention of urine, etc.

DR. HALLEY replied that if the point of the needle is inserted well inside the mucous membrane, into the tumor, but little pain will result, and no ulceration follow.

TUESDAY, JANUARY 26.—SECOND DAY.

MORNING SESSION.

But few members were present, and all business of import having been transacted, a motion to adjourn until the third Tuesday in May, 1886, was carried.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, February 3, 1886.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

SECTION OF ORTHOPÆDIC SURGERY.

DR. NEWTON M. SHAFFER reported that a Section of Orthopædic Surgery had been organized, and that at its first meeting Dr. Ketch read a paper on "Rotary Lateral Curvature of the Spine," which was discussed by Drs. L. A. Sayre, V. P. Gibney, C. F. Poore, L. H. Sayre, N. M. Shaffer, and others.

DR. M. A. STARR read a paper on

THE INTRACEREBRAL TRACTS: THEIR PHYSIOLOGY AND ITS BEARING ON THE DIAGNOSIS OF LESIONS OF THE CENTRUM SEMIOVALE.

In it he described in detail the functions and relations of the three sets of fibres, the projection, the commissural, and the association fibres, so far as they are known at the present day, and stated that lesions of the centrum ovale may give rise to three sets of symptoms, referable to these three sets of fibres. In illustration of the subject, he gave an elaborate report of a case of Charcot's, of which he had had the opportunity of making a careful personal study, and exhibited specimens of brains which had been hardened for six months in alcohol and prepared by teasing in such a way as to show the various intracerebral tracts.

DR. CROSSMAN remarked that these tracts were not shown as satisfactorily in the specimens exhibited before the Academy to-night as they had previously been in Dr. Starr's office, where he had had an opportunity of seeing the fibres exposed by the teasing process, the demonstration at that time being absolutely perfect.

DR. AUG. G. CAILLÉ read a paper on

PERMANENT DRAINAGE IN ASCITES,

in which he first related the case of an elderly gentleman who came to him for treatment about four years ago, suffering from cirrhosis of the liver. This soon necessitated tapping, and in the course of the next seven months he was tapped no less than nine times. Before resorting to a tenth tapping, Dr. Caillé determined that he would make a fistula in the abdominal walls, and put in a permanent drainage tube. He, therefore, made an incision one inch in length in the linea alba below the umbilicus, and inserted an inch of drainage tube into the peritoneal sac, retaining it by means of a varnished safety-pin, and using antiseptic precautions in the dressings applied. In about a week an eczema of the abdomen and thighs developed, owing to the fact that the patient could not keep himself dry by means of the cloths with which he was supplied. The abdomen and thighs were then smeared with mutton tallow, and the eczema disappeared in six days.

The result of the permanent drainage was that the general œdema, and all the other distressing symptoms from which the patient had been suffering, disappeared. He was soon able to go about with ease, and for nine months was able to attend to his ordinary occupations, contented and comfortable. He finally died from heart failure. When the drainage tube was first put in, from two to three pints of fluid were excreted daily; but this gradually diminished, until it ceased entirely, and the ascites never reappeared. An autopsy was made, when it was found that there was cirrhosis of the liver, with cardiac hypertrophy. There was not the slightest evidence of peritonitis at the point where the tube had been inserted.

A second case was that of a male, forty-six years of age, who had been a confirmed whiskey-drinker, and who was suffering from cirrhosis of the liver, ascites, and general anasarca, with all the distressing symptoms usually attendant on such a condition. He also had purpura hemorrhagica, stomatitis, and vomiting, and the heart's action was irregular and miserable. He was tapped once, and then the fluid reaccumulating, Dr. Caillé made an opening and inserted a permanent drainage tube in the same manner as in the preceding case, protecting the parts with iodoform gauze and dry towels. When the patient was in bed or sitting in a chair, a rubber tube conveying the fluid to a vessel on the floor was often attached to the drainage tube. There was at once great improvement in the general condition; but about three weeks after the fistula was made the patient suffered from a severe attack of epistaxis, which necessitated the plugging of the posterior nares. The purpura, vomiting, stomatitis, and other troubles then disappeared, and he lived in comfort, without any return of the ascites, for a considerable period, finally dying of paralysis of the heart. In this case no autopsy was made.

Of course, he said, it was not claimed that this treatment is curative. Its object is simply the amelioration of the troublesome symptoms always associated with ascites. All the points involved in it are comprehended in a discussion of four questions: The first is, What are the symptoms most troublesome and dangerous in ascites? Ascites may occur alone, or associated with general anasarca; but in either case dyspnœa, flatulence, constipation, debility, renal trouble from the pressure of the fluid, and a host of other evils are liable to ensue.

The second question is, How is collateral circulation established in cirrhosis of the liver? The various channels through which this was accomplished were pointed out by Dr. Caillé.

The third question was, Will absence of intra-abdominal pressure promote collateral circulation, the functional activity of other organs, and the comfort of the patient, as well as tend to prolong life? This he answered in the affirmative.

The fourth question was, How is drainage best accomplished? It could not be denied, he said, that the large amount of fluid which was drawn from the system in the method which he was advocating constituted a considerable drain upon the vital forces, and he showed what a large amount of albumen would thus be abstracted in a given time; but, on the other hand, this was of comparatively little importance on account of the benefit derived from the better performance of the functions of other organs which resulted from the establishment of drainage.

He then went on to say that the *technique* of the proposed plan of procedure might be improved upon. For instance, a hard rubber or glass tube might be employed, and a flax bag, or antiseptic pad, to be worn on the abdomen below the fistula, might be provided. In all cases it is necessary that antiseptic precautions should be observed, though the danger from penetrating

the peritoneum is found to be much less when ascites is present than under other circumstances. A large experience, he said in conclusion, is needed to determine the indications for permanent drainage, and the cases in which it is applicable.

THE PRESIDENT said that the procedure described by Dr. Caillé was an imitation of what is sometimes accomplished spontaneously by nature. Spontaneous rupture of the abdominal walls may take place in ascites, and it is not of very infrequent occurrence. It sometimes takes place in the linea alba, but most commonly at the umbilicus. The fistula made by nature, however, may be in a spot which is inconvenient and uncomfortable for the patient; but, when we make an artificial fistula, we can select the place which will be in every way the most satisfactory. Not long since, he had seen in the German Hospital a patient in whose case a spontaneous fistula had already been established when he came under observation. While he remained in the hospital he lost fifty pounds in weight, and he went out feeling comfortable and able to walk.

He then related another case, in which, he said, he had to resort to permanent drainage. This patient was a young woman, twenty-three years of age, in his service at Bellevue Hospital, who had a history of anæmia and chlorosis, and had attained the age of nineteen years before she began to menstruate. For six or seven months before admission menstruation had ceased, and some six months before the cessation she had noticed a circumscribed swelling in the right hypogastric region. This gradually increased in size until she came into the hospital, when it was found that the tumor was quite large. At that time, however, it was two-thirds in the left hypogastric region, and only one-third in the right. There was decided tympanites in the renal region and over the ascending colon. From the fluctuation recognized through the tumor he decided that it was a cyst, and probably an ovarian cyst originating in the right ovary. The uterus was normal.

An abdominal incision was made with a view of removing the tumor, when it was found that there was no cyst at all. The condition present was, in fact, ascites, with strong adhesions on both sides, and a glass tube was left in the abdominal opening for six weeks. In the meanwhile the fluid did not return, and the patient was discharged in an improved condition. Afterward, however, he learned that there had been a reaccumulation. In this instance the ascites was probably due to tubercular peritonitis, and the fatal termination was only a matter of time. Dr. Jacobi remarked that a number of years ago he had made precisely the same mistake in diagnosis, but it was one to which all are liable, since ascites, when thus circumscribed by adhesions, presents exactly the same characteristics as an ovarian cyst.

A third case which he related had come under observation after he had become acquainted with Dr. Caillé's procedure of forming an artificial fistula. The patient had cirrhosis of the liver, and suffered from icterus, purpura, epistaxis, dyspnœa, and loss of strength. He introduced a trocar through the abdominal walls, midway between the umbilicus and bladder, and through this inserted a sterilized tube into the peritoneal cavity. To this was attached a rubber tube to convey the fluid to a pail under the bed. This procedure was adopted as a palliative measure to give the patient, who was in a hopeless condition, as much comfort as possible, and the tube was kept in position until he died. At night it was usually plugged up with wax. The quantity of fluid which flowed through it at first was extremely large, but gradually became smaller and smaller. The general condition of the patient after the operation was favorable, but he finally died of exhaustion. At the autopsy there was not found the slightest evidence of local peritonitis. Dr. Jacobi said, in conclusion, that he was convinced that the plan proposed was a good one, and that he should repeat the operation whenever suitable cases presented themselves to him.

DR. LINDLEY inquired whether any medicinal treatment for the relief of the condition was used in Dr. Caillé's cases, in addition to the establishment of permanent drainage?

DR. MEYER stated that he had had under his charge a case of cellulitis ending in a large accumulation of pus, in which a fistula was spontaneously formed below the umbilicus. In this instance he made a counter-opening from the peritoneal cavity into the vagina, and through this the pus had been discharging for the last two years. The quantity has, however, been gradually diminishing, and the cellulitis was also decreasing. In ascites also, occurring in females, it had occurred to him, therefore, that it might be advisable to make an opening into the vagina.

DR. MEYER, in reply to a question from the PRESIDENT whether in the case mentioned he was sure that the pus was in the abdominal cavity, said that he was positive of this, and that the patient had previously had peritonitis.

DR. CAILLÉ having stated that that in his cases great care was used in the selection of food, but that no medicine had been used except Horsford's acid phosphate, DR. LINDLEY said that among the Dutch in South Africa he had found that honey was held in very high repute in cases of abdominal dropsy. He then related a case of his own there, in which, after tapping, the fluid rapidly reaccumulated. He was then persuaded by some of the old women to try the effect of honey, when, to his suprise, the man, although he had every symptom of cirrhosis of the liver, began to improve, and in time was apparently entirely cured. He would not pretend to give any explanation of this; but the great confidence in the efficacy of honey which was universal in that district, seemed worthy of notice.

DR. B. F. SHERMAN, of Ogdensburgh, suggested that the peculiar virtue of the South African honey might, perhaps, be derived from the flowers from which the bees gathered it.

THE PRESIDENT then made some remarks on the medicinal treatment of the affection in question. He was confident, he said, that he had seen cases of cirrhosis of the liver recover perfectly; but it was to be remembered that an interstitial hepatitis is not necessarily a universal hepatitis, just as interstitial nephritis, myelitis, and encephalitis might be partial, instead of involving the whole extent of the organ affected. In a number of cases which had come under his observation, in which the diagnosis of cirrhosis had been made by himself and others, the ascites had disappeared, and never returned; the liver getting smaller, without a corresponding enlargement of the spleen, and the patient becoming practically well.

The treatment was, to his mind, very simple. When we meet such cases of interstitial inflammation in practice, and can make out a history of syphilitic trouble, we always congratulate ourselves and the patient on this account, because of the more favorable prognosis which it enables us to make; there being a fair chance of recovery as a result of an appropriate course of treatment with iodide of potassium and bichloride of mercury. He then remarked that as a student he had been taught that it was a cruel thing to give mercury; that it was antiplastic, and that if with it you succeeded in curing the disease present in any case, it was only to destroy the patient with the remedy employed. Except in syphilitic cases, therefore, for a number of years he used no mercury whatever in his practice. During the last ten or fifteen years, however, he had been endeavoring to make up for this mistake in regard to this really most useful agent. He had found by experience that in various forms of interstitial inflammation mercury is often very beneficial, and in this connection he related a case of tabes which he had had under observation for about twenty-five years. For a long time there was no improvement, although nitrate of silver and other agents had been faithfully tried; but since he had resorted to the use of mercury there had been marked progress, and the patient, although he had never had syphilis, was now practically well.

In interstitial hepatitis, nephritis, myelitis, and encephalitis, therefore, he would recommend the use of mercury; and it should be given in such a form and in such doses as could be taken for a long time. As a rule, the bichloride is the most suitable preparation, and it might be given, largely diluted, in solution, or preferably in pills, the ordinary amount called for being about one-tenth of a grain three times a day. The patient should be instructed to use a chlorate of potash wash, and to watch his gums carefully. The cyanide of mercury has been recommended by some; but he has had very little experience with it.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, January 22, 1886.

THE PRESIDENT, T. G. RODDICK, M.D., IN THE CHAIR.

DR. WM. GARDNER exhibited the following pathological specimens:

(1) FIBROID POLYPUS OF THE UTERUS.

This was about the size of an orange, and was removed from a woman aged 48, the growth being in the vagina, and was attached along the whole length of the posterior wall of the uterus. The patient was much blanched by hemorrhage, which had lasted almost constantly for five years. She made a good recovery.

(2) DISEASED OVARIES.

These were two in number, and were slightly enlarged and cystic. They were the second ovaries from two cases of ovariotomy. The tumor in one case was an unilocular ovarian cyst, and in the other an ordinary multilocular cystoma. In each case the uterus was enlarged and retroverted, and menorrhagia had in both been a prominent symptom. Dr. Gardner remarked that in such cases where the second ovary is diseased, the question arises as to what should be the proper treatment when part of the ovary seems healthy. Schröder has recently published reports of a number of cases in which, instead of complete removal, he had excised the diseased tissue by a wedge-shaped incision, and brought together the cut surfaces by sutures. The object in such cases is to permit, if possible, of subsequent conception. Dr. Gardner was not aware, however, of conception having occurred under such circumstances. He thought that, after ovariotomy, the second ovary had often been unnecessarily removed, as slight enlargement and a cystic condition do not necessarily imply that an ovarian tumor will be developed therefrom. The responsibility on the part of the surgeon in dealing with such conditions assumed a new aspect in the light of Schröder's experience.

CEREBELLAR DISEASE.

DR. GEORGE WILKINS read a paper on the above subject, and reported the following cases:

Case I. Cerebellar Hemorrhage.—On the 2d of November, 1882, I was called to see a young lady, æt. 19, who, I was told, had had a fainting fit which she had not come out of. She had arisen at her usual hour, and expressed herself as being well. She went down to breakfast, but soon complained of a most intense pain in the head, accompanied by vomiting. The vomiting relieved her somewhat. Her mother left her lying on a sofa and returned in a few minutes to find her, as she supposed, in a fainting fit. Dr. Wilkins was sent for, and, on his arrival within a short time, found that the girl was dead.

A post-mortem examination could not be obtained till two weeks after death, and was performed by Dr. Wm. Osler. The brain was the only portion of the body allowed to be examined. On removing the brain, nothing abnormal was seen on the upper surface of the hemispheres, but the under and lateral surfaces of the right temporal lobe were covered with an extensive but thin clot, as were also the pons and medulla. The right lobe of the cerebellum was considerably larger than the left, and, on cutting into it, a large clot the size of a plum was observed close to the central lobe. On examining more closely, a pinhole aperture was seen on the superior surface of this lobe, and the internal clot was through this opening continuous with the clot covering the temporal lobe. Death, of course, was caused by pressure on the medulla from the blood which escaped from a ruptured bloodvessel in the cerebellum.

Case II. Cerebellar Hemorrhage (?).—A year ago last December I was called to see a young lady, æt. 16, who had been complaining of headache, which her mother thought to be biliousness. Two days before, she had awakened in the night, complaining of intense pain in the back of her head, accompanied by vomiting. Both lasted for five hours, and then gradually ceased. Next day she remained in bed, and suffered but little. During that evening the pain became again intense, and the vomiting returned. On the following morning she was seen by Dr. Wilkins, and then complained of constant and acute pain in the left occipital region. Temperature was normal, and pulse 72. At the time the pain was thought to be possibly neuralgia, and hop poultices were ordered to the back of the head, and

bromide of potassium internally. Next morning at eight o'clock she was seen again, and was comparatively easy; but her parents said she had been in agony all night. Her temperature and pulse were still normal. Dr. Wilkins was puzzled to account for the symptoms, and suspected tubercular disease of the brain. On visiting her at 2.30 P. M. the same day, he found she had died about five minutes before his arrival. For some hours before her death she had complained of general numbness, and her intellect was not clear. The pain ceased some two hours before death. No autopsy was allowed, but, from the symptoms and sudden termination, the reader of the paper considered himself justified in regarding it as a case of cerebellar disease.

Case III. Cerebellar Abscess.—John F., æt. 17, was admitted into the service of Dr. Wilkins, at the General Hospital, June 10, 1885, suffering from malaise, headache, vomiting, dizziness, and general weakness. Patient was a strong, healthy boy previous to present illness, which commenced some two weeks before admission. About this time he had a fall, striking shoulder and head, which caused a severe attack of vomiting, and confined him to bed for several days. On going back to work he got wet, and complained of pains in head, back, and body generally, and the vomiting and dizziness returned. These symptoms gradually increased in severity up to date of admission. On admission it was noted that he was stupid and lethargic; his pupils were dilated, tongue coated, and there was loss of appetite; had also insomnia and constant vomiting. Temperature 100°, pulse 70. Case was regarded as a mild attack of typhoid. The headache still continuing, an ice cap was ordered for his head, and bromide of potassium given in drachm doses at bedtime. On June 13 he became very stupid and restless, insisted on getting out of bed, could walk, but was very unsteady and weak, a swaggering gait. On June 16, four days after admission, on making his morning round, the House Physician, Dr. Gustin, found the patient cyanotic and almost asphyxiated, and he died soon after. The post-mortem showed pus in the arachnoid space, between the medulla and right side of cerebellum, and in the right lobe of cerebellum was found an abscess the size of a large filbert.

Dr. Wilkins, in speaking of the second case, said he thought he was quite justified in placing it under the head of cerebellar disease, because of the sudden termination of life without convulsive symptoms, and the continuance of consciousness. He thought these symptoms could only be explained by the occurrence of a hemorrhage from the cerebellum finding its way to the floor of the fourth ventricle and there compressing the motor sensory tract. The abscess in the third case he considered to be due to the fall which the patient had two weeks before admission to the hospital, as he was quite well before that time.

Dr. Wilkins alluded to the fact that the brain rests on a water cushion (first pointed out by Hilborn), which breaks the force of blows, but in some parts the brain is in contact with its bony walls, as, for instance, the brain rests on the orbital plates of frontal bones anteriorly, and the occipital bone posteriorly. Hence the frontal lobes and cerebellum, in blows upon the skull, are more liable to injury.

In this connection Dr. Wilkins showed the Society a specimen of hemorrhage into the white substance of the right frontal lobe. The case was that of a man who, while intoxicated, fell down stairs. He lived ten days after the accident and complained but little of pain, showing the insensitiveness of the brain itself. The intense pain of the first case was readily explained by the pressure caused by a blood-clot between the membranes of the brain, these latter possessing sensitive fibres.

In Cases I. and II. the persistent vomiting with constant and severe pain in the head and intense restlessness, Dr. Wilkins held, was significant of cerebellar disease.

DR. GEORGE ROSS said that many of the cerebral cases were at first thought to be bilious attacks, but the severe character of the pain should exclude this supposition, and if vomiting were present the case could not be looked upon as neuralgic. He thought it a pity that an ophthalmoscopic examination had not been obtained. In Dr. Wilkins's third case, which was long-continued, he had no doubt an ophthalmoscopic examination would have shown an optic neuritis.

DR. HENRY HOWARD said that the symptoms recorded by Dr. Wilkins in his second case were not necessarily those of cerebellar disease, as the same symptoms might be produced by pressure on the pons medulla from hemorrhage into the fourth ventricle.

DR. GODFREY thought that many cases of cerebral hemorrhage were benefited by free bleeding, and he was amazed that bloodletting as a method of treatment had of late years been so entirely abandoned.

DR. ARMSTRONG related the case of a man aged forty-five, who had a very severe headache which lasted a few days and then disappeared; it returned again and was accompanied by vomiting. The man soon died, and a post-mortem revealed a large clot covering the left side of the base of the brain. He asked whether there was any specific history in any of the cases reported.

DR. STEWART asked Dr. Wilkins what reasons he had for thinking his case was one of cerebellar hemorrhage.

DR. KENNEDY related a case of sudden death in a woman from supposed cerebral hemorrhage, which was at first treated as a case of hysteria. There was no vomiting in this case, and but little pain.

DR. MIGNAULT asked why bloodvessels should rupture in the brains of apparently healthy young women. It seemed strange that rupture should take place without previous disease of the vessels.

DR. WILKINS, in reply, stated that there was no evidence of specific disease in any of his cases. He looked upon the second case as one of hemorrhage because of its suddenness and the fact that the temperature was normal. Had the case been one of abscess or tubercular disease, the course would have been less rapid and there would have been higher temperature.

NEWS ITEMS.

YELLOW FEVER COMMISSION.—The House Committee on Commerce has agreed to report favorably a bill for the appointment of a commission of three to visit Mexico, the Central American States, and Brazil, for the purpose of investigating the methods pursued in those coun-

tries for the protection of the people against yellow fever. The bill provides that two members of the commission shall be appointed from among persons now in government employ, and the third from civil life.

PENNSYLVANIA LEAGUE FOR THE PROTECTION OF SCIENTIFIC RESEARCH.—There was recently formed in Philadelphia an association known as the Pennsylvania League for the Protection of Scientific Research. The objects of the League are in general terms stated in its name, but we understand that the intention is to resist all attempts to obtain any legislation in regard to vivisection beyond that which now exists upon the statute books of the Commonwealth. It is held by the society that the general act for the punishment of cruelty to animals is all sufficient for the prevention of any abuse of scientific methods.

There are two classes of members, active and honorary. The annual dues for active members is fixed at $2; and we understand that any member of the regular profession, in good standing, will be accepted as an active member, no formality being necessary, except to send an application to one of the officers. The officers are a president, secretary, and treasurer, and an executive committee of three. Dr. H. C. Wood was elected President, and Dr. Hobart A. Hare, Secretary and Treasurer. The executive committee has not yet been nominated.

OBITUARY RECORD.—At his residence in New York, on the morning of February 7th, after a brief illness, ALFRED C. POST, M.D., Professor Emeritus of Clinical Surgery and President of the Medical Faculty of the University of the City of New York.

Dr. Post was born in New York on January 13, 1806. He entered Columbia College, and was graduated in the Arts in 1822. A year afterward he entered the office of his uncle, Dr. Wright Post, an eminent surgeon, and began attending the lectures at the College of Physicians and Surgeons. After receiving his degree, in 1827, he went to Europe, and attended lectures in England, Ireland, and Scotland. Then he went to Germany and France to continue his studies, and spent a number of months in the large hospitals at Paris and Berlin. He came back to America after an absence of two years.

A few days after his return, in 1829, he was appointed House Surgeon of the New York Hospital, and within a year became assistant to Dr. Alexander H. Stevens, the Professor of Surgery in the College of Physicians and Surgeons. He was elected Surgeon to the Eye and Ear Infirmary in 1830. In 1851 he was appointed to the Professorship of Surgery in the Medical Department of the University of the City of New York, a position which he held up to 1875, when he was made Emeritus Professor.

He was a member of the County Medical Society, the Academy of Medicine, the Pathological Society, and the Surgical Society; Consulting Surgeon of St. Luke's and the Presbyterian Hospitals, President of the New York Missionary Society, and Director of the Union Theological Seminary. He leaves three sons and four daughters.

THE DEATH OF DR. JULES GUÉRIN, the dean of medical journalism in France, and the founder of the *Gazette Médicale de Paris*, has just been announced. Born in 1801, he was graduated in medicine in 1827 after six years of study under Chaussien, Boyet, and Roux. In 1837 he was a successful competitor for the *grand prix* in surgery, and it is stated that the thesis then presented on the deformities of the osseous system would, with the additions he has since made, fill some sixteen folio volumes of text, besides one hundred tables and four hundred plates. It is hoped that some means will be found for insuring the publication of this most valuable monument of industry.

NOTES AND QUERIES.

A CORRECTION.

To the Editor of THE MEDICAL NEWS.

SIR: Permit me to say, in reply to Dr. Massey's criticism, in THE MEDICAL NEWS, of my note, that in allowing him 100 ohms for the resistance of the metal circuit, I referred to the external resistance less that of the cotton. The "metal circuit" comprises wire and *milliampèremeter*. Milliampèremeters are of *high* resistance; why this is so, will be found explained in *Elementary Lessons in Electricity*, by Silvanus Thompson, pages 161 and 314. Mr. Barrett, whose milliampèremeter I am informed Dr. Massey uses, writes me that its resistance is 170 ohms; my allowance is therefore 70 ohms *less* than it should be. Waite and Bartlett inform me that their milliampèremeter has a resistance of 175 ohms. I am, very truly yours,

GRANVILLE FAUGHT.

115 NORTH FIFTEENTH ST.,
February 4, 1886.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING FEBRUARY 6, 1886.

BABIN, H. J., *Surgeon.*—Ordered to U. S. S. "Vandalia."

DIXON, W. S., *Surgeon.*—Ordered to Marine Rendezvous, New York, to relieve Surgeon Babin.

WHITING, ROBERT, *Passed Assistant Surgeon*—Ordered to U. S. S. "Vandalia."

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM FEBRUARY 2 TO FEBRUARY 8, 1886.

BROWN, H. E., *Major and Surgeon.*—Granted leave of absence for six months, on surgeon's certificate of disability, with permission to leave the Department of the Missouri.—*S. O. 29, A. G. O.*, February 4, 1886

WHITE, ROBERT H., *Captain and Assistant Surgeon.*—Granted two months' leave of absence, to take effect when his Department Commander may think proper.—*S. O. 29, A. G. O.*, February 4, 1886.

CHAPIN, A. R., *First Lieutenant and Assistant Surgeon.*—Relieved from temporary duty at Fort Robinson, Neb., and ordered to rejoin his proper station, Fort Laramie, Wyoming Ter.—*S. O. No. 11, Department of the Platte*, February 2, 1886.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE THREE WEEKS ENDING FEBRUARY 6, 1889.

BENNETT, P. H., *Assistant Surgeon.*—Died at Detroit, Mich., February 3, 1886.

WATKINS, R. B, *Assistant Surgeon.*—To proceed to Detroit, Mich., for duty, February 3, 1886.

PETTUS, W. J., *Assistant Surgeon.*—Appointed an Assistant Surgeon, February 5, 1886. Assigned to duty at New Orleans, La., February 6, 1886.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course, not necessarily for publication.

All communications relating to the editorial department of the NEWS *should be addressed to No. 1004 Walnut Street, Philadelphia.*